The magazine for AUSTRALIAN Amateurs

December 2003
January 2004
Volume 71 No 12

WIRELESS INSTITUTE OF AUSTRALIA

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Amateur Radio

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Our Cover this month

One of the many highlights of 2003 was the Great Australian Science Show (GASS). WIA Victoria and four of its affiliated clubs, EMDRC, GGREC, RWARC and NERG, combined their resources to mount a display at the Melbourne Science Museum on 16–18 August. The look on this young man's face as he encounters the wonder of Amateur Radio, testifies that the hobby is far from dead.

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, How to write for Amateur Radio is available from the Federal Office on receipt of a stamped self-addressed envelope.

Back Issues

Back issues are available directly from the WIA Federal Office (until stocks are exhausted), at $4.00 each (including postage within Australia) to members.

Photostat copies

When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

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Glen Dunstan VK4DU

Editorial comment

Colwyn Low VK5UE

Is 2004 YOUR year to join the AR team?

Firstly Season's Greetings to all members and readers. This year has seen the start of a new era in Amateur Radio.

Some three years ago when I became Editor I predicted that Morse Code would be dropped as a requirement to hold an unrestricted Amateur licence and some readers thought it would never happen in their lifetime. Well as you all know by now, come 1 January 2004 there will be no Morse Code requirement to get on the HF bands. Further the DX window at 3.5 MHz will be expanded to 25kHz. Other changes are also in the pipeline and will be notified in 2004.

There is always a need in organisations like the WIA for more people to put their hands up when there is work to be done. We have a number of these dedicated people who run the WIA and have been a major part of the negotiations with the ACA, on the conditions under which Amateur Radio operates in Australia. Most of what is being done now is a direct result of the work of WIA volunteers, we are all indebted to them and we all need to express our thanks to them for their dedication. Notice of the Federal WIA AGM and Annual Convention appears in this issue. Please note that we are calling for volunteers to be nominated for the positions on the Federal Executive and the Co-ordinator positions necessary to keep the organisation alive and relevant.

This spirit of Volunteering goes beyond the WIA. About 60 WICEN and other amateurs helped make the Classic Adelaide Rally a great success. I know WICEN and other Amateurs in other States have made similar contributions to events there. WICEN has already been activated this Spring/Summer season to help with emergency situations. While still hoping there will be no major emergency requiring WICEN activation let us make sure we do have the equipment ready and the batteries charged in case we do have to respond to an emergency.

Andy Cory 3DA0TM has been visiting Australia for the World Rugby Cup and I had the pleasure of spending a few hours with him when he visited Adelaide. Swaziland at present has two Amateurs operating on HF and about 16 on VHF. Andy has a monobander on 15 m, so I suppose that is where to look for him when he gets back home.

Now for a request for help. Ross Christie has had to relinquish the authorship of the DX column so we need a new author for "How's DX?" Ross is willing to give guidance and assistance to the new columnist. We also need someone to write the Contests Column. Ian Godsil had to give up the Federal Contest Co-ordinators position some months ago and we have been struggling since then. So please think about helping out for say 2004 and then let me know. We can then discuss what is needed.

As this issue is being finalised we have been saddened by the sudden death of Gil Sones VK3AUI. Gil has written Technical Abstracts for many years. He was a member of the Publications Committee up till his death and was a past Editor of the magazine. A full obituary will appear in the January/February issue of AR.

I wish you all a joyful Christmas and a peaceful and happy 2004 on behalf of the AR Publications Committee.

The President, Executive, Council and Staff of the WIA wish all our members, their families, and readers of AR magazine, a joyous Christmas 2003, and a happy and prosperous 2004.

Ernie Hocking VK1LK
Email: president@wia.org.au
PO Box 691, Dickson, ACT 2602

ACA drops Morse for licence from January 1

The benefits following years of activity by the Federal WIA have at last begun to emerge. On 13 November 2003 I received a late afternoon telephone call from the ACA notifying me that an important announcement would be made on Monday 17 November 2003.

Many of us I suspect correctly guessed the nature of the announcement if not the exact details. However the weekend was no doubt an anxious one for many. The wait was at the end of the day worth while with the announcement indicating that the ACA would formally remove the Morse code testing requirement for all grades of licence on 1 January 2004. Thanks to all the various people who helped to publish the news so quickly over that weekend, and especially our own Graham Kemp VK4BB who I know worked long and hard to record extra material from the ACA and WIA to ensure that as many people as possible could be informed on the WIA broadcasts over the weekend of 15/16 November 2003.

As a long time QRP and CW fan, I can state that homebrew, low power, and the sheer thrill of working CW in difficult conditions will ensure that I for one remain active using CW and would not be surprised to see activity increase rather than decrease over coming years.

Although amateur radio operators do not have a formal code of ethics I am sure that you will all respect the timing of the announcement and resist the temptation to operate on air a little earlier than 1 January. The WIA has a lot of negotiations to undertake with the ACA in a whole range of areas and jumping the gun on something as fundamental as this will not serve the long term interests of revitalising amateur radio here in Australia.

In order that we can both celebrate this historic occasion and provide some on air activity I have suggested that 1 January be designated an HF activity day. Jim Linton VK3PC has kindly offered to assist in setting up some simple rules to allow us to present a few awards for participation. The details of the day, along with rules etc will be made available on the various WIA web pages and via the divisional broadcasts. I can only encourage you to dust off your HF rigs and make 1 January 2004 a day to remember (and don't forget that from 1 January 2004 the 80m DX window [3.776 MHz – 3.800 MHz] will also be available for use)

The Federal WIA already has a Yaesu FT100D available for a prize and with any luck some more prizes will be identified so that more categories of winner can be defined. The intention is to encourage people who have not previously been able to operate and as such prizes will only awarded to calls who gain HF privileges on 1 January 2004. So if you know someone who is able to contribute a prize then please let me know so that we can organise things.

I also know that there are many who are very concerned about the ACA announcement with the implication of the disappearance of on air CW. On a personal note, as a long time QRP and CW fan, I can state that homebrew, low power, and the sheer thrill of working CW in difficult conditions will ensure that I for one remain active using CW and would not be surprised to see activity increase rather than decrease over coming years. So if you hear me on air on the 1st then ask for my FISTS, RSARS, and Australian CW Operators club numbers.

Sitting here on a cool Canberra morning letting my mind wander I can already hear some of the New Year resolutions drifting over the ether:

1. I will get that new all featured rig this year, and
2. I will improve my Morse code speed this year, and
3. I will convince Joe to convert his electronic qualification to an amateur radio licence this year

Seriously though this is a very important occasion for amateur radio and represents a great opportunity to recruit all of those friends of ours with electronics qualification to become amateur radio operators. I have already started telling many of my friends who have electronic qualifications that now they only need to sit the regulations examination and they can be on air on all bands and begin to enjoy the wonder of radio. Who do you know that you can persuade to join us?

The last part of the ACA announcements of 17 November is to alert us to the fact that further announcements will be made over the coming weeks as the responses are analysed. Realistically though I expect 2004 to be the big year for announcements about the major issues around entry level licencing and dealing with interference matters. As such I can see that 2004 will be another busy year for the Federal WIA

So I'll wish you all a happy Christmas and a prosperous new year. I look forward to working as many of you as possible on 1 January 2004 on the activity day. 73 to you all and I look forward to hearing your comments, either directly or via the divisions. All the best in amateur radio.

Ernie Hocking VK1LK

Hidden microhenries exposed!

Neville Chivers VK2YO
57 Vulcan Street
Kingscliff NSW 2487

Recently a circuit under construction by me required an inductance listed in microhenries, giving wire size, and number of turns on a specific type toroid. All very good information if you happen to have the correct wire size and specified toroid on hand.

If you are at all like me, you have acquired over the years different sizes of wire - but never the one specified - unmarked small toroids, along with other nondescript inductors without markings loosely deposited in an old tobacco tin labelled 'RF Chokes mH?'

I usually use the time-honoured method of loosely coupling my GDO to a coil and capacitor combination and reading off the frequency when the meter dips. This works OK with air wound coils, but is not much good with small inductances or encapsulated Radio Frequency chokes. Something more practical, as well as accurate, is required.

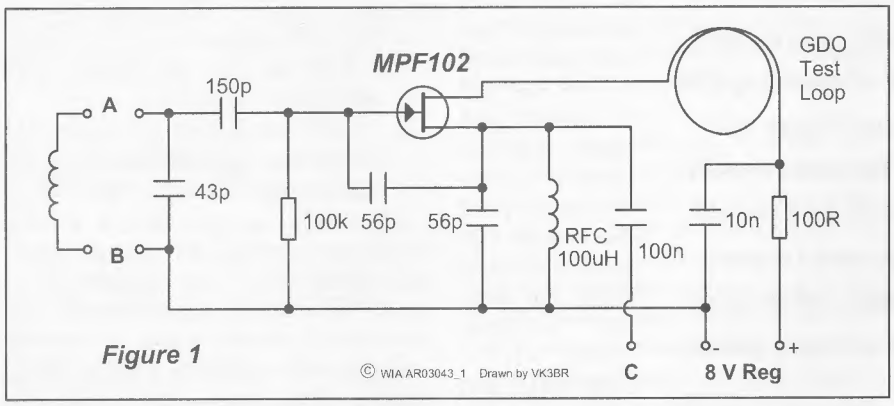


Figure 1

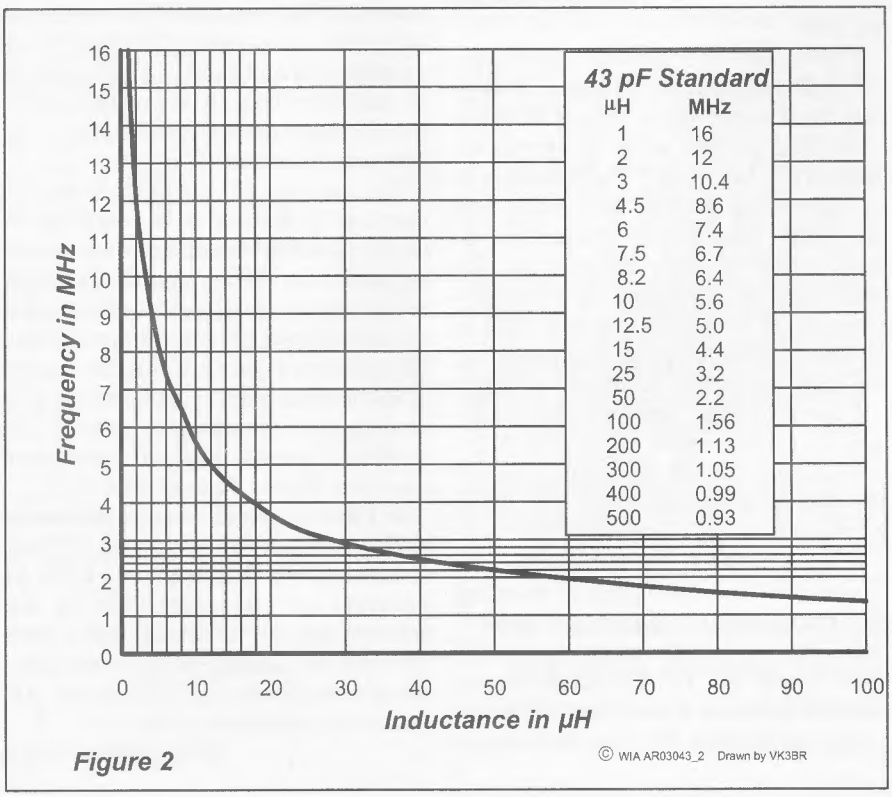


Figure 2

What to do? Look up the available technical literature on hand, in my case the recent back copies of *Amateur Radio* magazine and the 1998 edition of the *ARRL Handbook*.

In *Amateur Radio* I found articles by Drew Diamond VK3XU in the May 1997 and February 1999 issues, by Lloyd Butler VK5BR in June 1997, and by John Hassell VK6JAN in January 2000. All are well written, practical construction articles on the subject of small inductance measurement, but require a 50 µA or 1 mA meter which retail at about $25.00 if you don't have one in your junk box. And I don't!

In the *ARRL Handbook* there is an interesting constructional description which converts an unknown inductance in µH via a three stage And Gate IC to be read as volts on a digital voltmeter. This method looks to be even more expensive if you don't already own a digital voltmeter and have to buy one.

I like to make use first of all of what I do have, which is a digital frequency meter, a receiver with full coverage, and a gate dip oscillator. Using any one of these I can ascertain the value of small inductances with the circuit of the oscillator in Fig 1 and connected as shown. The principal is that the parallel tuned resonant circuit of unknown value inductance and fixed known value capacitance will produce a specific frequency which can be compared with a graph plotted with known values of inductance and a fixed standard capacitance, in this case of 43 pF.

The active device in the oscillator is an MPF102 JFET which, along with all the other components, is available from

How do you know if you are a real Ham ?

by Josef HB9CIC
Translated by Mike VK3KRO

Here's a little test:

If you answer the telephone with your callsign and then add : "This is HB9DOK, I can read you 5 by 9".

If the geography teacher telephones you and wants to know why your child is designating the countries as VK, VE, SU and CT3.

If you use telegraphic codes in business e-mails.

If you dig through your neighbour's hard rubbish pile on the nature strip to see if there is any material for antennas in there, and if your dog answers to the name Marconi.

If you notice that the blackbird on the roof is warbling Q-codes, and if your alarm clock wakes you with a cheerful H...H...H...H in the morning.

If in the search for new apartment, the most important criteria are HF positioning and antenna installation possibilities, and if you immediately visualise all potential cable ducts and wall feed-throughs.

If your child, in response to the question "where do you live ?" replies : "IARU Region 1, Zone 14, JN47HQ, Schaffhausen".

If the most important question relating to holiday planning is "How do I get a visitor's license ?" (provided that there is any money left after the station equipment purchases).

If when going on holidays, the XYL has to stay at home because with all the transmitting gear safely stowed in the car, there is no longer any space left for her.

If when purchasing a new car, the capacity of the power system, the ignition interference suppression and the HF-interference rejection capability of the electronics are the most important attributes.

If you leave the house only after you have checked that you have the HT, but at the same time forget to take the key to the door with you.

If you talk about a storm as "local QRN", telephone your work colleague and inquire about the "sked" of the bowling club and if, at the sport club, you answer only to your callsign instead of your given name.

If when you are on holidays, instead of buying postcards, you fill in those QSL cards you brought with you, put stamps on them and post them in the letterbox.

If you worry about which indicators show whether you are a real radio amateur filled with the ham-spirit.

... then you are a real radio amateur, you bet!

Hidden microhenries exposed! *continued*

the usual suppliers such as Jaycar and Dick Smith.

The unknown inductance is connected with the shortest practical leads across A – B. All component leads and wiring in the gate area of the oscillator should also be kept as short as possible to minimise stray inductance.

If you use a GDO to determine the frequency of oscillation, turn the GDO on until the meter needle just registers movement. Then place the GDO coil near the one turn loop in the drain lead, rotate the calibrated GDO dial and look for a forward kick of the meter needle and read off the indicated frequency of oscillation from the GDO dial.

If using a digital frequency meter then the test leads should be connected between C and -8 V as indicated in Fig 1.

If using a communication receiver, the antenna socket should be connected to C and the receiver earth point to -8 V, and a band of frequencies needs to be tuned until the oscillator is heard and the frequency determined from the digital display.

Obviously, the use of the digital frequency meter is the most efficient method.

Once the resonant frequency of the unknown inductance and standard capacitor is determined, you can read off the value of the inductor in µH by consulting the graph (Fig 2) I have plotted using a few RFCs of marked value with +/- 10% tolerance I had on hand.

I have plotted the curve from 1 µH to 100 µH on a scale of 1 µH to one division and 1 MHz to five divisions. If you wish to use a fixed capacitor other than 43 pF across terminals A – B, you will have to plot your own graph.

The oscillator was built on a small piece of perforated board and hard wired. Terminals A – B are solder lugs spaced about 1 cm apart to which I soldered the inductance to be measured.

This unit can also be used to check crystal activity by removing the 43 pF capacitor across A – B and substituting a crystal for the inductor shown.

Finally, a disclaimer. If someone has published a similar article in any technical journal in the past, I am unaware of it.

ar

A solid-state AM/CW transmitter for 1.8 and 3.5 MHz

Drew Diamond VK3XU
45 Gatters Road,
Wonga Park, 3115

For various technical and operational reasons, amplitude modulation (AM) continues to attract a significant number of enthusiasts. For instance, in and around Melbourne, a friendly group of AMers participate in regular nets, notably the "Coffee Break" session at 11 A.M. weekdays on (nominally) 1.825 or 1.843 MHz. Wednesday nights at 8.30 P.M. sees 1.843 MHz similarly activated. A large "round-table" group also meets on 3.566 MHz on Friday nights.

Many contemporary models of commercial transceivers do indeed offer AM as a standard fitted mode. Unfortunately, in some iteration, the quality of the transmitted AM signal leaves a little to be desired. Output power may also be severely limited. And so thoughts about "home-brewing" something for the job inevitably occur. The valve transmitter outlined in Ref 1 was one earnest attempt to answer this need.

In practical terms, an AM transmitter may be constructed and made operational with a minimum of test equipment. Younger readers may not be familiar with valves, or there may be difficulty in finding some of the necessary parts for such a job. Offered here are plans for a solid-state transmitter using quite readily available off-the-shelf components.

The prototype model has the following characteristics:

Bands:	1.8 and 3.5 MHz.
Modes:	AM and CW.
Output Power in 50 ohms:	20 W AM, 0 to 20 W CW.
Spectral Purity:	Harmonics at least -40 dBc. No spurs.
Audio Bandwidth:	About -6 dB down at 150 Hz and 6 kHz.

Circuit

As most AM activity normally occurs on just a handful of frequencies, the circuit may be considerably simplified by employing crystal control. See Fig 1. Crystal (or ceramic resonator) is maintained in oscillation with an MPF102 FET. A 300 pF (or thereabouts) variable capacitor permits a small adjustment of a crystal's nominal frequency, whereas a 3.580 MHz ceramic resonator may be "VXOed" from about 3.5 to over 3.6 MHz, thus covering the most popular segment of the 80 m band.

A 74HC04 CMOS hex chip has its first inverter configured as an amplifier by use of a 100 k resistor between input and output of the stage. A 1N914 clamp diode improves the sensitivity of the input so that only 10 pF of coupling capacitance is needed between oscillator and amplifier. To obtain the two "phases" necessary to drive the push-pull output amplifier, the signal is taken from each side of the second inverter. The two signals so created are applied to two pairs of two paralleled inverters, thus alternately switching the gates of the push-pull power output (PA) pair, comprising two IRF612 power MOSFETs (Ref 2).

Positive supply for the '612s is fed via broadband toroidal choke transformer T1. A stack of two cores was found necessary to handle the high frequency energy plus dc current demand without core heating. Signal developed at the drains is coupled to the output using a toroidal bifilar-wound broadband transformer T2. The drain to drain impedance is close to 50 ohms, so T2 may be configured as a 1:1 transformer.

The PA '612 MOSFETs are alternately switched hard on by the square waves applied to their gates (Class D), so the output waveform also resembles a square-wave. The amplified signal must therefore be passed through a low-pass filter to remove harmonic energy. The simple two-section filters shown reduce all harmonics to less than -40 dBc.

After much experimenting with push-pull power transistors, MOSFETs, and re-building a mains transformer to work as a modulation transformer, it was eventually realized that an almost ideal

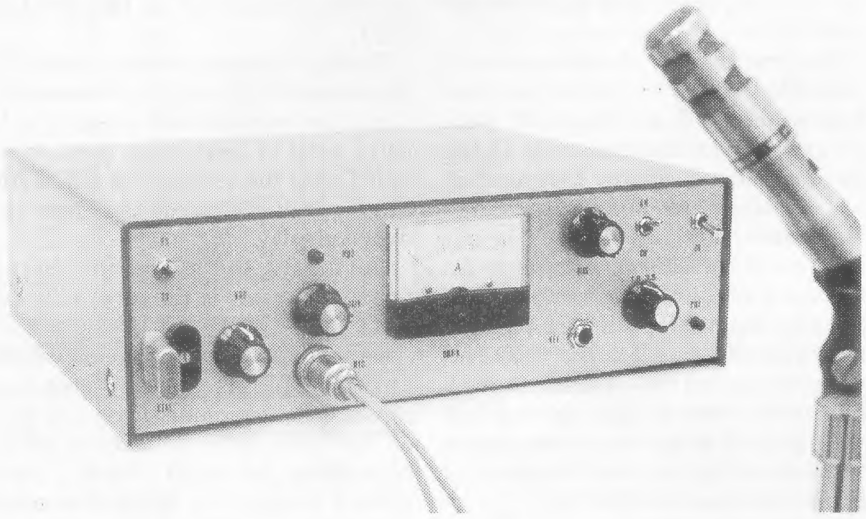


Photo 1 – AM/CW transmitter for 1.8 and 3.5 MHz.

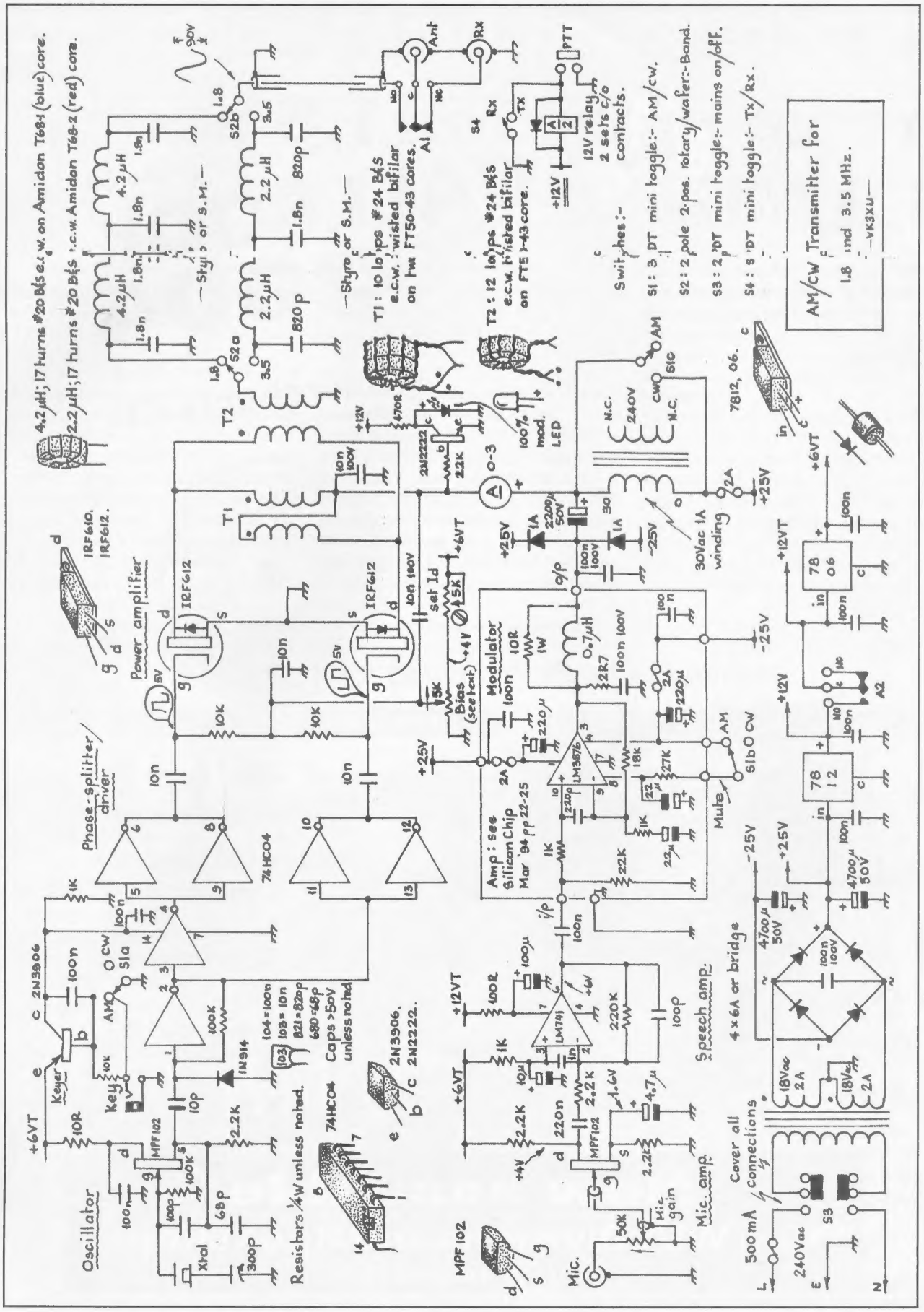
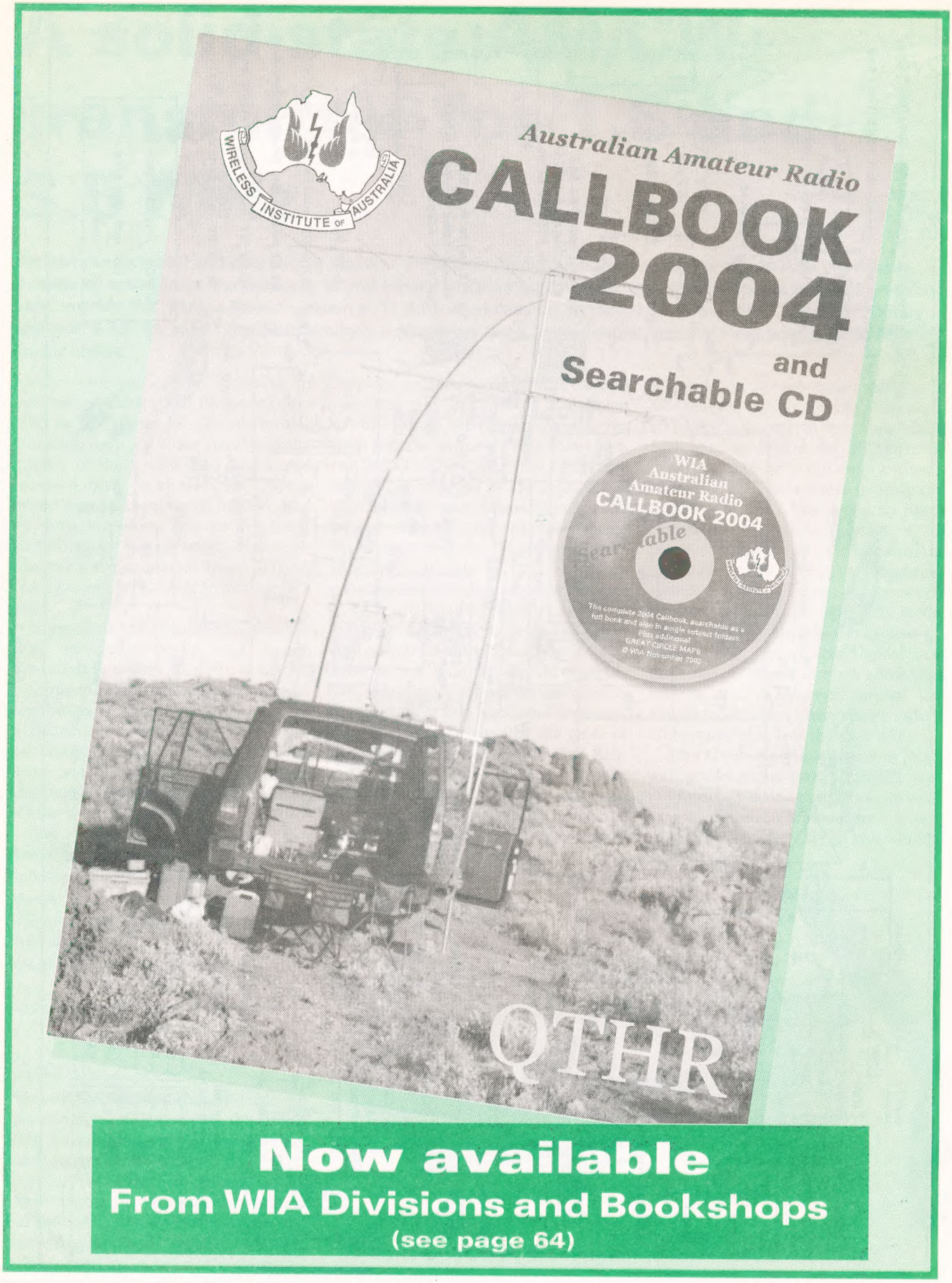

AM/CW Transmitter for 1.8 and 3.5 MHz.
—VK3XU—
Oscillator
Phase-splitter driver
Power amplifier
Modulator
Speech amp.
Mic. amp.
4 x 6A or bridge
Cover all connections
Resistors ¼W unless noted.
Caps >50V unless noted
Amp: see Silicon Chip Mar '94 pp 22-25
T1: 10 loops #24 B&S e.c.w. twisted bifilar on two FT50-43 cores.
T2: 12 loops #24 B&S e.c.w. twisted bifilar on FT50-43 core.
4.2 µH; 17 turns #20 B&S e.c.w. on Amidon T68-1 (blue) core.
2.2 µH; 17 turns #20 B&S e.c.w. Amidon T68-2 (red) core.
Switches:-
S1: 3 DT mini toggle:- AM/CW.
S2: 2 pole 2 pos. rotary/wafer:- Band.
S3: 2 DT mini toggle:- mains on/off.
S4: 5 DT mini toggle:- Tx/Rx.
12V relay 2 sets c/o contacts.
30Vac 1A winding
240Vac
500mA

Figure 1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modulator could be made from a conventional audio power amplifier I.C. A quick look through some electronics catalogues soon located a reasonably priced 50 W amplifier kit for a Silicon Chip amplifier (Ref 3). With +25 and –25 Vdc rails, the LM3876T produces about 30 W of clean audio power.

The problem of coupling the (modulation) amplifier output into the RF power amplifier (PA) was solved by simply employing the 30 Vac winding of an ordinary 240 : 30 Vac power transformer (which effectively operates as a 1:1 auto transformer). A 2200 µF capacitor is used to ac couple the amplifier's signal into the PA. Modulation characteristics are significantly improved by also applying a small amount of audio signal to the gates of the PA.

Sensitivity of the audio amp. module is about 1 V rms, so an LM741 speech amplifier is required to raise the microphone signal level. An MPF102 FET provides a little gain, but more importantly, interfaces the 50 k microphone input to the 2.2 k input of the '741 speech amp. circuit. There is a reserve of gain, so a wide variety of common microphone types may be used. The 100 pF feedback capacitor (around the '741), coupling and source by-pass capacitors have been carefully chosen to give an audio response (at the -6 dB points) of about 150 Hz to 6 kHz, which should suit most voice characteristics.

A toroidal mains transformer with two 18 Vac windings (18-0-18) of 2.2 A capacity, when full-wave rectified and smoothed, provides positive and negative rails of 25 Vdc for the audio amplifier chip. The +25 V rail also sources the RF power amplifier and supplies the +12 V and +6 V regulator chips, which power the antenna change-over relay and low-level stages.

100 % modulation is indicated with a simple transistor and LED circuit; PA voltage is sampled through a 22 k resistor, which turns the 2N2222 on, thus shorting the LED and preventing it from conducting. When the modulation cycle swings the effective PA voltage down to within a few volts of zero (about 95 % modulation), the transistor turns off, causing the LED to glow on voice peaks.

Construction

My homemade aluminium box/chassis pictured in Photo 1 measures 75 x 260 x 220 mm HWD. Any case of similar or slightly larger dimensions should do. An aluminium case allows us to use the bottom surface as heat-sink for the RF PA MOSFETs, and the rear panel as heat-sink for the LM3876T audio amplifier chip. A suggested layout for the major components is pictured in Photo 2. Not a great amount of waste heat is generated when the transmitter is run from 25 Vdc rails, so extra heat-sinking is unnecessary.

The Silicon Chip audio amplifier (modulator) should be assembled in accordance with the instructions supplied with the kit, which includes printed circuit board and all necessary components for that module. You may find, as I did, that the screws and spacers at the LM3876 I.C. end of the circuit board are redundant, because the audio

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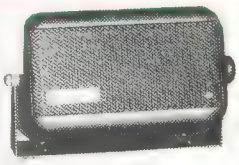

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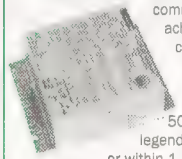

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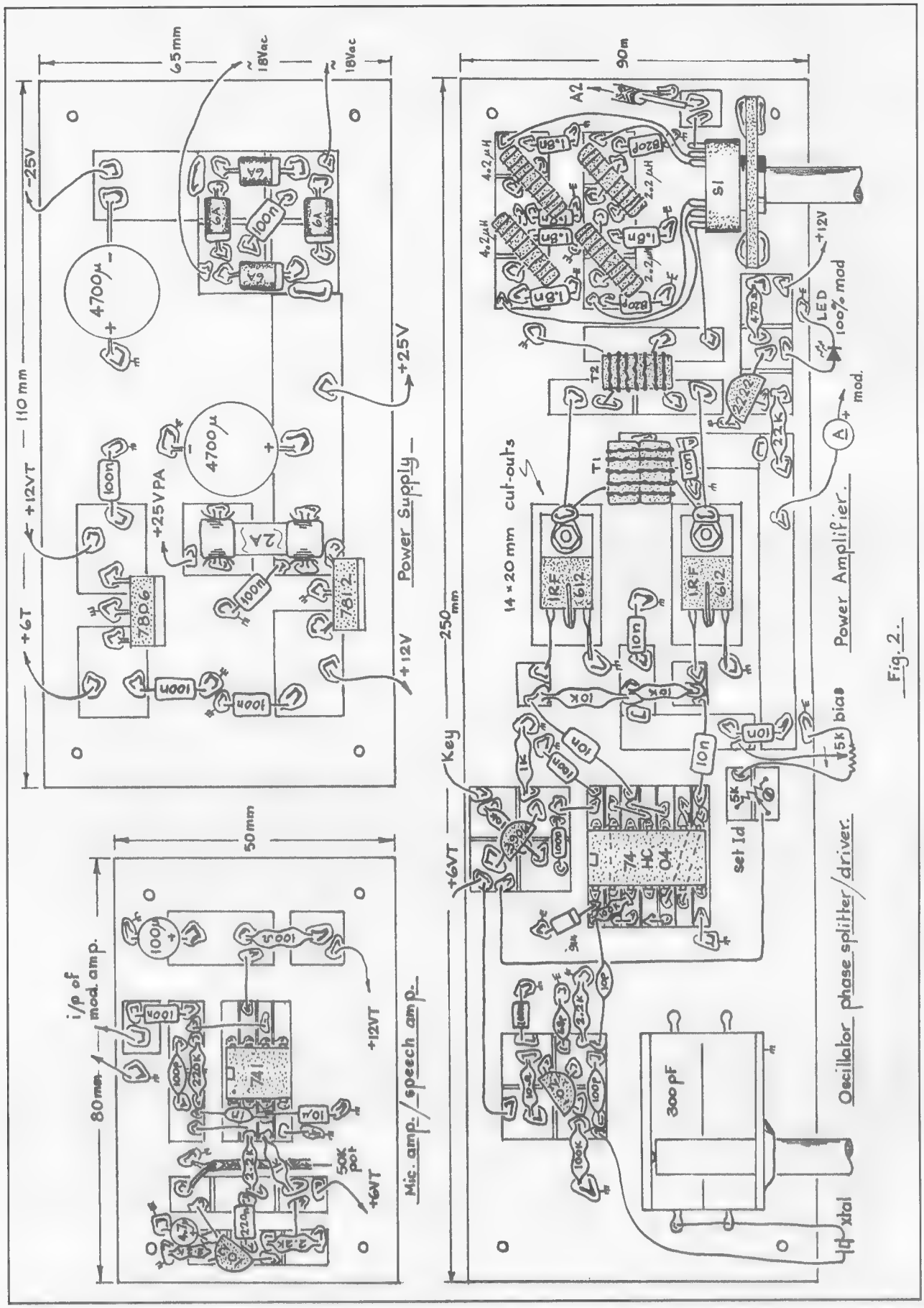

Fig. 2.

Figure 2

board receives adequate support through the chip's mounting. The lug of the device is near -25 V rail, so don't forget to include an insulating silicone washer and mounting hardware.

Figure 2 shows 'Paddyboard' (Ref 4) layouts and board sizes for the mic/speech amp., power supply and oscillator/driver/PA boards. Ugly or neat 'blob' construction would also serve, provided that the RF and audio circuits are constructed along similar lines, and each circuit board, copper side up, is used as 'ground-plane'.

LM741 and 74HC04 chips should be fitted into sockets, these being soldered to 30 mm x 4-strip and 30 mm x 7-strip Vero off-cuts, strips uppermost. Run a junior hacksaw cut down the centre to create the individual lands. The socket pins poke through the Vero, so the socket and Vero must be super-glued onto the fibre side of a similarly sized scrap of circuit board. This 'substrate' may then be glued upon the circuit board as shown.

To allow the IRF612s to dissipate their excess heat into the chassis, rectangular holes of 20 x 14 mm should be cut in the PA board to allow these devices to be attached, using silicone washer and mounting hardware, upon the bottom panel of the chassis, as illustrated in Fig 2 and Photo 2. The PA board must be attached to the chassis base without spacers. The IRF612s should be fitted after the RF board has been installed.

Variable capacitor (any type with a maximum C of 300 or 450 pF will serve) may be mounted with solder lugs upon the RF board. To keep wiring to the low-pass filters short, band switch S1 may be mounted upon a 40 x 40 mm square of circuit board material, which in turn is soldered upright upon the RF board near the filters, as pictured in Fig 2.

Broadband transformers T1 and T2 are made as follows: Take two 300 mm lengths of #24 B&S (0.5 mm) enamelled copper wire. Fix the ends of the pair in your bench vice, twist the free ends together, then clamp the pair in the chuck of an eggbeater type hand-drill. Whilst maintaining tension on the pair, turn the drill until you have about three twists per cm. Give the drill a firm pull away from the vice to 'set' the twist.

For T1, carefully wind the pair onto two Amidon FT50-43 toroidal ferrite cores until you have about 10 loops. Snip the excess wire to provide leads about 20 mm long. Remove about 10 mm of enamel from each wire end. With your multimeter on ohms, identify the individual 'windings'. Winding starts are indicated on the circuit with a dot. Connect the end of one winding to the start of the other to form the supply end of the transformer. T2 is 12 loops wound on a single core in a similar manner to T1. Take care that the windings are connected exactly as shown on the circuit.

Power supply board may be attached to the rear panel as shown in Photo 2. Heat-sinks are not required for the regulator chips. The two audio output protection diodes and 2200 µF coupling capacitor may be accommodated upon an 8-lug tag strip attached to the rear panel.

Wire connections to the antenna change-over relay contacts A1 should be reasonably short, so the relay may be positioned near the (Ant)enna and receiver (RX) connectors. To prevent transmit power being accidentally applied to your receiver's input, fit a different connector type for each. Use miniature coax or shielded wire for the connection between S2b and relay, as shown in Figs 1 and 2.

All wiring connections on the primary (mains) side of the power transformer must be suitably covered with close-fitting plastic spaghetti or heat-shrink tubing to prevent accidental contact.

For more stable VXO operation on 3.5 MHz, an ordinary 3.58 MHz ceramic resonator may be fitted inside a defunct style 'D' crystal holder, as described in Ref 5.

Operation

Do a thorough inspection for accuracy of all wiring, parts placement and their polarity where applicable. Remove the 2 A fuse in the +25 V supply for the PA. Adjust the 'set Id' trim-pot initially for maximum resistance.

To test the audio amplifier, lift one lead of the 2200 µF amplifier output coupling capacitor and connect a hefty hi-fi loudspeaker of perhaps 8 ohms between chassis and the audio output pin of the audio module. Plug in your microphone. Turn the audio gain pot to zero. Apply mains power. In the RX position of S4 (open), measure your + and -25 Vdc rails. Being un-regulated, they may read a little higher or lower. Close S4 (TX position). Relay A must operate. All being well, advancement of

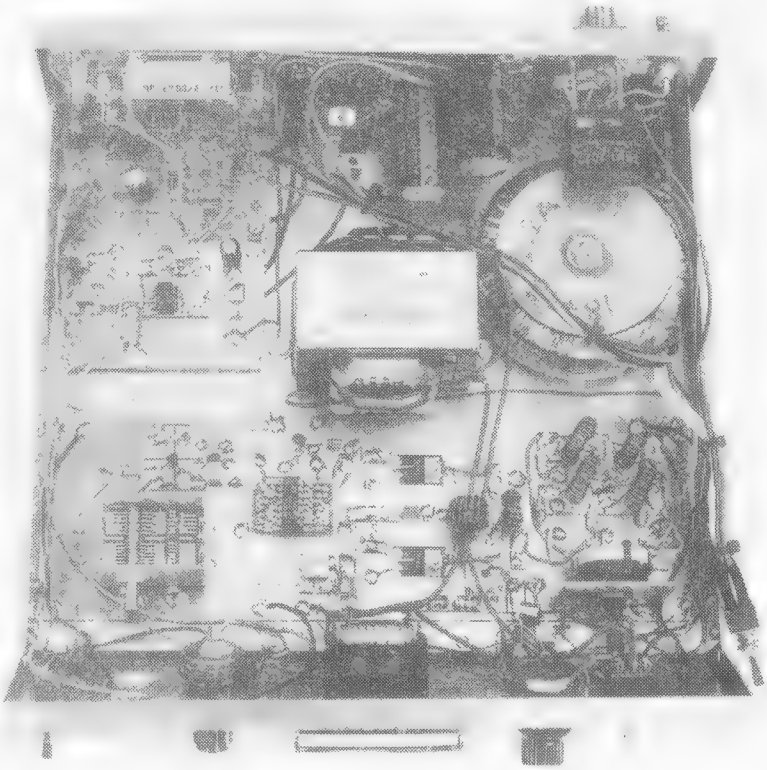

Photo 2 – Internal view – front panel lowered for clarity.

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the 50 k gain pot will allow you to bring microphone speech up to a very high level. Your voice should sound clean and natural, with a reserve of gain. Measure the +12 V and +6 V regulated supplies. The LM 3876 should remain cool.

Switch off and re-connect the 2200 µF capacitor and replace the 2 A PA fuse. Insert a 1.8— or 3.5— MHz crystal, and set S2 to the corresponding band. Connect a suitably rated 50 ohm dummy load/power meter to the Ant connector. Plug a Morse key into the key socket. With S1 in CW position (key open), close S4 (TX). Indicated drain current (Id) should be zero. Rotate the Bias pot to maximum (arrow). Now adjust the 'set Id' trim pot for a no-signal standing current of about 0.2 A. Key closure should cause Id to rise to about 1.5 A, indicating that the PA MOSFETs are being driven properly. Output power should be about 20 W.

Switch S1 to AM. Whilst speaking, advance the 50 k gain pot until the 100% mod LED just begins to glow on voice peaks. Indicated Id should flicker a little around the 1.5 A level. If an oscilloscope is available, observe the modulated output waveform, where a steady whistle should produce (below 100 % mod) "text-book" bullet-shaped peaks and troughs.

Listen to the AM signal on your station receiver. Provided that the receiver is not overloaded, voice should sound natural, without excessive "whiskers" at levels below 100 % mod. Keyed CW signal should be similarly clean, without excessive clicks, chirps or ripple. Some salient voltages are shown on the circuit of Fig 1 to aid in any necessary troubleshooting.

The PA is very tolerant of serious load mis-match. However, load SWR should generally be held at less than 1.5. In AM operation, best modulation characteristics are obtained at full (20 W) output. On CW, the Bias pot may be used to set the power level from zero to full output as required. On a hot day, and after a long transmission, standing Id may creep up a bit. Simply re-adjust 'Bias' to bring the no-signal level (CW mode- key open) back to about 0.2 A (not critical- but should be less than 0.5 A). To net the XO or VXO without putting a signal to air, switch S1 to CW, and S4 to TX, whereupon the oscillator's signal will be audible with the key open.

Parts

All of the common components are collectively available from our usual electronics suppliers. Ordinary ceramics and some polyester capacitors incur a small loss when used in a low-pass filter, so silver mica (S.M.) or Styroseal/polystyrene are recommended. Our local suppliers seem to have dropped these from their catalogues. However, they are available mail order from Ocean State Electronics (www.oselectronics.com) and Antique Electronic Supply (www.tubesandmore.com).

The 80 VA mains power transformer, which has two 18 Vac/2.2 A windings, is available from Altronics; Cat. No. M5118. For the "modulation" transformer; any mains transformer, which has a winding of 30, Vac at (about) 1 or 2 A will do. Mine is a Jaycar MM 2008. A generic (or A & R) type 6672 will also serve.

The suggested Silicon Chip audio amplifier module (Ref 3) may be a D.S.E. K 5606 (includes heat-sink- not required as the back panel serves) or Jaycar KC 5150.

IRF612s (or IRF610s) are known to be available at reasonable cost from Electronic World; ph 03 9723 3860, www.elctronicworld.aus.as (will answer mail orders).

Ideally, the PA current meter should be a 2 or 3 A fsd, but these are no longer a catalogue item. A stock 5 A meter would do. Some D.S.E. stores may still have "universal meters", which, with a suitable shunt, could be made to read 3 A fsd. Or it may well be possible for you to adapt a 2 mA (or similar meter) to read 2 A fsd by making an appropriate shunt.

References and Further Reading

1. "A 25 W AM/CW Transmitter for 1.8 and 3.5 MHz"; *AR*, Nov. '02.
2. Power MOSFET Transistor Data; Motorola.
3. "Build This 50 W Audio Amplifier Module"; D. Yates, *Silicon Chip*, Mar 94.
4. "Paddyboard Circuit Construction"; *AR*, Feb. '95.
5. "A Simple HF Signal Source"; *AR*, Oct. '02.

ar

5.7GHz ATV *distance record* – 111 km

L G Benjamin VK5RD

Having been operational on Amateur Television for some time in the 3, 13, 23 and 70cm bands I decided to venture into other parts of the microwave spectrum available to the amateur service. Not only would this be a challenge but it would help to establish an amateur presence before data and video services completely take over, as we are seeing to some degree in the 2.4 GHz band.

Which band to go for? 3 or 5 GHz, either would be interesting although power stages at these frequencies are expensive to purchase or indeed build. That question was soon answered when inquiries revealed that surplus 6.4 GHz 5 watt amplifiers (+37 dBm) requiring approximately 300 mW (-5dBm) of drive were available at a very reasonable price. Even better, for an additional small fee they could be supplied retuned or as it is called in the trade snowflaked to 5.7 GHz. Further inquiries revealed however that 3.4 GHz amplifiers or discrete components to build one were difficult to find, hence it had to be 5 GHz.

Having decided on 5 GHz it came to my attention that no distance record had been established in Australia for amateur television in this band or indeed the 3.4 GHz band. Why not create one?

To this end discussions with Barry VK5BQ with whom I have regular contacts over a path of some 70 km on various bands up to and including 10 GHz ATV resulted in the purchase of two of these amplifiers as the basis of a complete 5.7 GHz system.

Over a period of some months late last year two systems were constructed and tested culminating in an initial transmission from Barry VK5BQ in Stansbury to Maitland VK5AO located in Adelaide some 80 km to the East on the 5th of November 2002. Pictures received by VK5AO on a scale of (P1 to P5) were P5. This was very encouraging when one considers that although VK5AO is located some 300 ft above sea level he was only using a chaparral feed (no dish) mounted 30 feet above ground. Unfortunately at this time I was unable to participate as my own equipment although operational had been packed away ready for a record attempt at some time in the future. (Photo 4 test pattern)

As a result of VK5BQ's transmission and subsequent contacts it was decided that an attempt on the record would be made sometime in late November. However, before such an attempt was made both ends of the link needed to be tested to ensure reliability and satisfactory operation.

Accompanied by Graham VK5JD I traveled to Stansbury on Sunday the 24th of November where to the bewilderment of some locals and caravan dwellers we conducted tests with VK5BQ over a path of some 3 to 4 km. (Photo 5. The VK5BQ set up at Stansbury)

Buoyed by our success we decided to make an attempt on the record the following day, Monday the 25th of November. As dawn approached it was apparent that Murphy had moved in and no record would be created this day except perhaps annual rainfall for Yorke Peninsula. It was so heavy and cloud layer so low that visibility just a few hundred feet ahead was difficult. Forever the optimist, I persuaded Graham that by the time we got to Menglers Hill some 120 km from Stansbury the weather may have improved sufficiently to give us a chance of success although privately I was very doubtful. "It's unbelievable", I kept muttering to myself, "no bloody rain for almost 12months and it has to rain today of all days".

These doubts were confirmed upon our arrival at Menglers Hill. If anything the weather had got even worse with winds of

Photo 1. The set up at the Telecom site near Williamstown SA.

Photo 2. "You beaut!" Ben VK5RD

Photo 3. The team at Williamstown. Ben VK5RD and Graham VK5JD

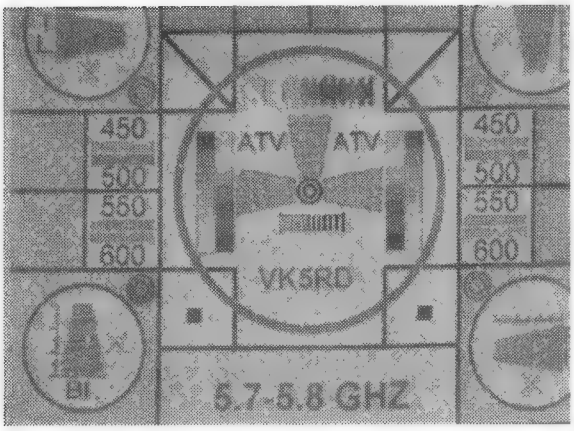


Photo 4. Test pattern

sufficient speed that erection of the antenna was near impossible. To add to our woes the ground underneath was muddy and waterlogged and in addition trees, large wet trees, the bane of all microwave operators stood between us and VK5BQ's QTH at Stansbury.

Dejected, cold and wet but not beaten, we adjourned to the local Hotel to (sorry for the pun) drown our sorrows. After the second or third beer the pain wore off and the barmaid started to look half reasonable. After a few more we returned home to Adelaide.

Discussions over the next couple of days resulted in another attempt from an alternative site some 10 to 15 km nearer to Stansbury but further East and at a greater altitude.

This time success, no rain, no wind and no trees.

On Thursday the 28th of November 2002 a 5.7 GHz two way national ATV record was established between Barry VK5BQ and myself Ben VK5RD at 12.40pm local summer time or 0210Z. The distance involved was 111km from a Telecom site some 600metres above sea level located approx. 5km east of Williamstown to VK5BQ's QTH 20 metres above sea level located 3 km south of the township of Stansbury on Yorke Peninsula. (Photos 1, 2, and 3)

Signals both ways were so strong that a much greater distance could have been claimed if an alternative site further to the East or North East could have been readily identified.

Not wishing to ignore the achievements of other operators in the band I am aware that much greater distances have been attained by FM, SSB or CW operators using narrow band emission. One must remember however that FM ATV is 18 MHz wide not a few Hz or 25 kHz wide. Having said that, each mode presents different demands on equipment in use.

Before concluding transmissions the obligatory bottle of champagne was consumed on camera before adjourning to the Williamstown Hotel for a late lunch. This time the barmaid looked half reasonable even before one glass of amber liquid was consumed.

On the way home Graham and I discussed what record we may be able to break and/or establish in the future and locating other suitable sites for future reference. 3.4 GHz was discussed amongst other bands but at that time suitable amplifiers etc were not available at least at prices most amateurs with long pockets and short arms can afford.

Since then however, 15 watt (+ 42dBm) 3.4 GHz amplifiers have become available requiring some 4 milliwatt (+6dBm) for full output. At the time of writing this article a 3.4 GHz system is under construction so maybe another record in the future.

For those technically minded, transmitting and receiving equipment used at both ends of the link were similar except for size of dishes and feeds employed.

The base band transmitter consisted of a phased locked loop controlled 1152MHz oscillator modulated by video and audio to produce a frequency modulated composite signal which when applied to a times 5 multiplier produced a signal on 5760MHz. With either a suitable pad or variable control of some sort, sufficient drive was applied to the final amplifier to produce 5 watt output. The audio subcarrier used was 6.5MHz.

The receiving system consisted of a GaAs Fet 5GHz converter to an analogue satellite receiver and video monitor. The IF chosen was in the order of 1 GHz.

VK5BQ'S antenna consisted of home made 1.2 metre mesh dish utilizing a chaparral feed exhibiting a gain of 35dBi at 5.8 GHz.

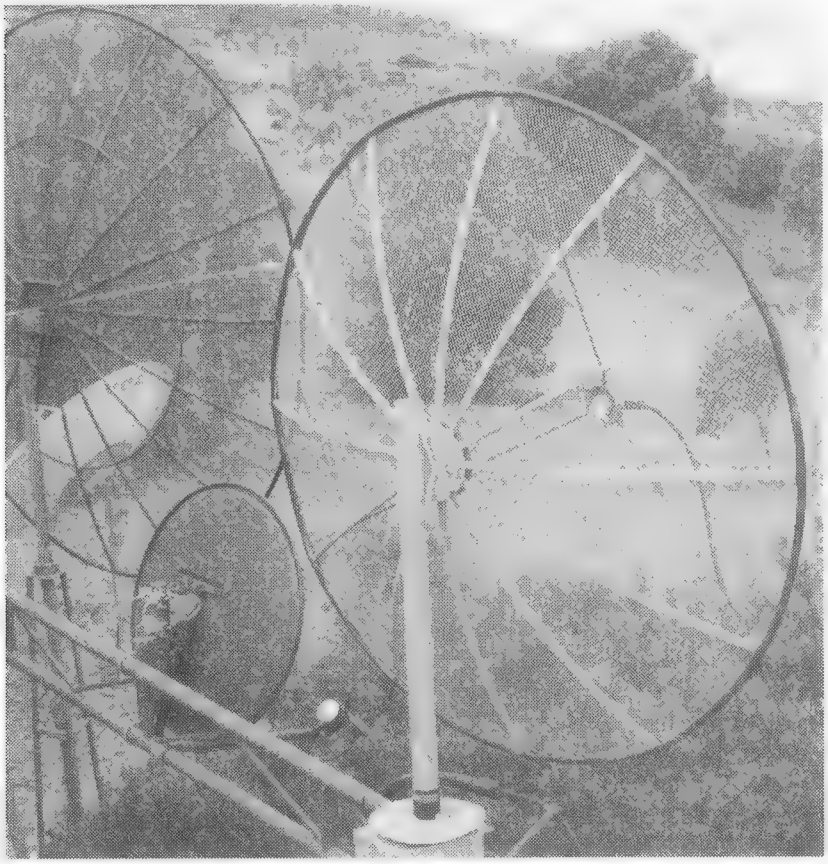


Photo 5. The VK5BQ setup at Stansbury

continued on page 16

A CW transmitter for 40 metres

Joe Rotenberg VK3BBN

Not long ago I wrote a letter to AR in which I said that in order to keep the art of electronics alive in Australia people who used to teach laboratory work at educational institutions ought to encourage hams to make something.

I remembered that I had once taught laboratory work at an educational institution. I then tried to remember whether I had ever encouraged any ham to build anything or indeed built anything myself, and at this stage I began to feel rather guilty.

This article describes a simple CW transmitter for 40 metres. There are only 11 components, not counting the morse key itself and the various sockets; and the output power is of the order of 1/2 watt depending on how carefully you make it.

Principle of operation

The circuit is a crystal oscillator with an untuned transformer that matches the antenna load to the collector. Oscillation is achieved by means of an additional "tickler" winding on the transformer that provides positive feedback to the base via a series crystal.

A low pass filter on the output cuts out harmonics, and supplies a "flywheel" to the output circuit. The purpose of the resistor is to provide some bias to start the oscillator off. It also provides the dc bias needed by the transistor during oscillation, as there is no other dc path to the base.

The purpose of the electrolytic capacitor is to provide some key shaping.

There is also a small capacitor across the electrolytic for decoupling. Without it the RF impedance of the power supply and morse key cables will reduce the RF voltage seen by the transformer, resulting in a reduced output power.

Choice of transistor

The transistor chosen is the BD 139, a cheap audio power transistor, which however has a very high top frequency (unity gain at 250 MHz). While not intended for this application, it seems to give good service.

Construction

Because this is a transmitter, and a crystal controlled one at that and not a receiver there is no need to shield the circuit. Thus it may as well be assembled in a plastic rather than a metal box. (I find plastic easier to work with than metal, particularly when it comes to filing large holes.) For a circuit as simple as this it is hardly worth making any kind of circuit board and the components can just be glued to the inside walls of the case. Interconnections can then be made with stiff wire.

One possibly tricky part is to work out the correct value of the resistor. This should be done to give a standing collector current, with the circuit not oscillating, of 420 mA at a supply voltage of 12 volts. Before soldering in the transistor, measure its current gain. This can be done on most digital multimeters. The resistance in ohms is then given by:

R = Current gain x Supply voltage / dc current (in ampere)

Example: For a current gain of 168,

R= 168 x 12/ 0.42

= 4800 ohm

= 5.6 k, taking the next preferred value up.

If you don't have a means of measuring the current gain of your transistor, then to be on the safe side, design for a gain of 250, which is the maximum quoted by the manufacturer. This gives a resistance of 8.2 k. Doing this will reduce the power output for a lower gain transistor sample, but it should still work.

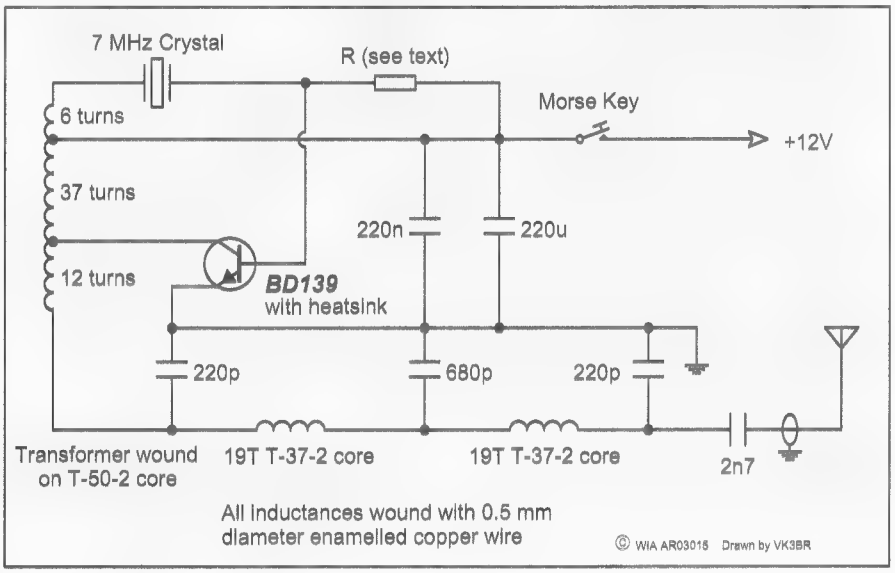
The other point to remember is ordering the crystal. In this circuit, the crystal is working in series mode, so make sure you mention this when buying the crystal otherwise it won't work exactly on the right frequency.

On the Air

Unfortunately I am confined to a small ground floor flat. I have restrictions that preclude putting up antennas and so all I have is a small piece of wire inside my study. With such an antenna and only half a watt all I could do was get across Melbourne, which actually is reasonably easy. Maybe I could have got further with more patience, but this is not one of my virtues.

I would be interested to hear of your experiences with the transmitter. I am QTHR in the callbook.

I know we all have black boxes which can work much better with much less effort, but the point of the exercise, as I said at the beginning is to keep the art of electronics alive



5.7GHz ATV distance record

continued from page 14

My own antenna consisted of a solid 600 millimetre aluminium dish utilizing a tapered wave guide with dipole and reflector feed exhibiting a gain of approximately 29 dBi at 5.8 GHz.

Both dishes were prime focus types with an f/d ratio of about 0.375.

My received signal at Stansbury was simultaneously recorded and relayed via 1250 MHz back to viewers in Adelaide making a round trip of some 185 km.

In conclusion Barry and I would like to acknowledge Graham VK5JD for his support in carting the gear around in his fourwheel drive over some roads which could only be described as unreal. Graham was also instrumental in locating a suitable site and filming the whole event except the barmaid. (Photo 4)

I would also like to mention Mark VK5EME who supplied many of the parts and kits from which our stations were constructed. In addition, thanks to Steve VK5SFA for the loan of his portable generator and 12 volt monitor.

Finally for those who may be thinking about ATV remember it was only a few years ago I was a dedicated HF man. Although having worked on the allocation of microwave services for a number of years I had no practical hands on experience.

With the help of other ATV operators and the availability of very reliable and easy to build transmitters and converters I have been able in a short period of time to construct phase locked loop, digital readout ATV transmitters for 1250 MHz, 2.4 GHz, 5.7 GHz and 10 GHz with associated receiving equipment, antennae and feeds.

It's really not that difficult provided you follow tried and proved rules of construction, testing and safety which if you ignore can cost you big money and a lot of grief.

A wide selection of kits and accessories is available from Minikits here in South Australia. For more information have a look on Minkits' web page: http://www.minikits.com.au Follow the instructions and you can't go wrong.

Well, what now since the record was established?

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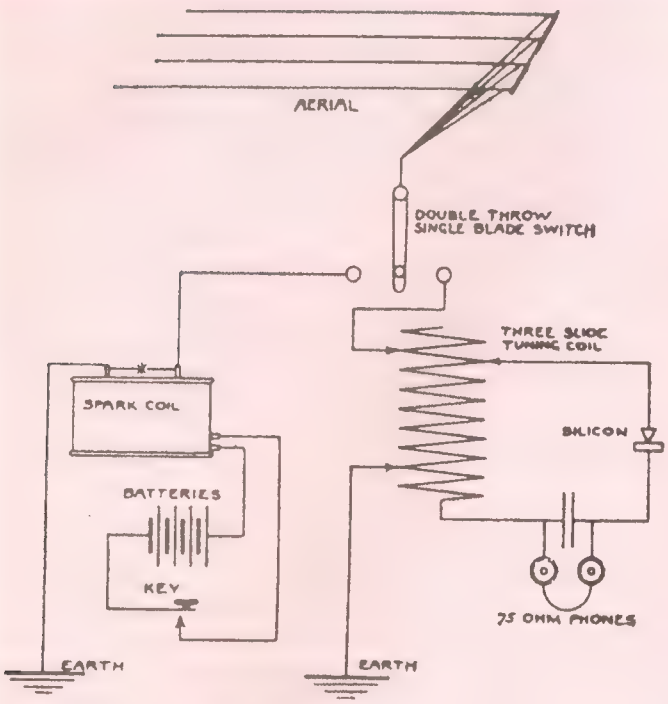
The *Sparks* era

Malcolm Haskard VK5BA
"Windrush House"
RSD 1244 Bassnet Road
One Tree Hill SA 5114
Phone 8280 7192

To commemorate the centenary of the first radio transmission across the Atlantic on 12th December 1901 (by G Marconi) the Historical Radio Society of Australia (SA Branch) held a special meeting that focused on spark transmission. Mr Don Hosking, the current SA President, spoke and demonstrated his working models of spark transmitting and receiving equipment. Anyone interested in this Society should contact the Secretary Alistair McAllister on 8523 4462, or email - alizoo@,kern.com.au



This a complete station diagram? Yes, indeed, in the era when the spark coil and crystal detector were supreme. From the *Wireless Age* of June, 1914.

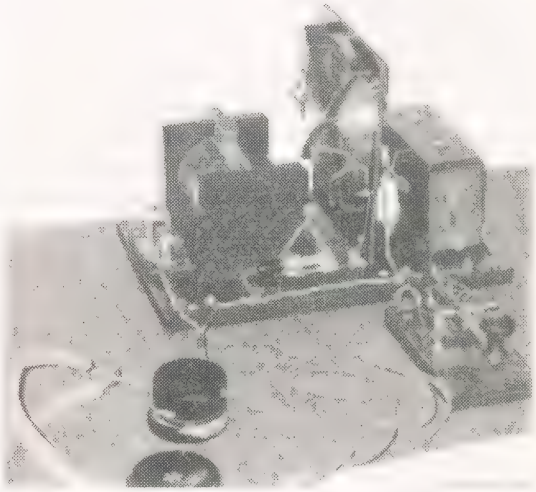
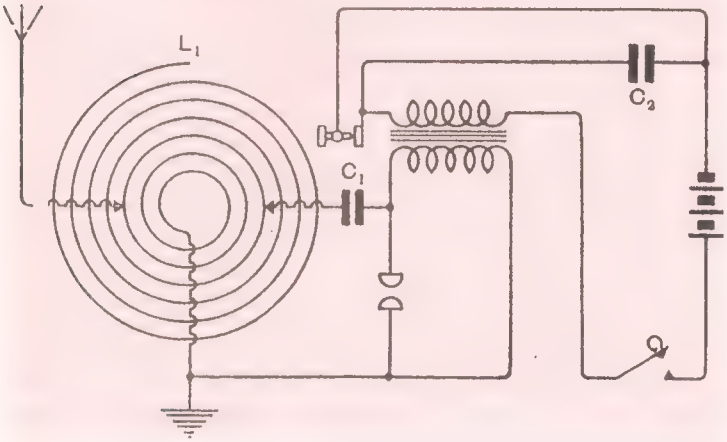


Photo 1.Reproduction of an amateur radio spark transceiver of the 1915 era. The transmitter is built around a model T Ford ignition coil while the double slide tuned crystal set receiver uses a silicon/steel detector. Built by Malcolm Haskard VK5BA.

SMALL SPARK TRANSMITTER—H.B. 89



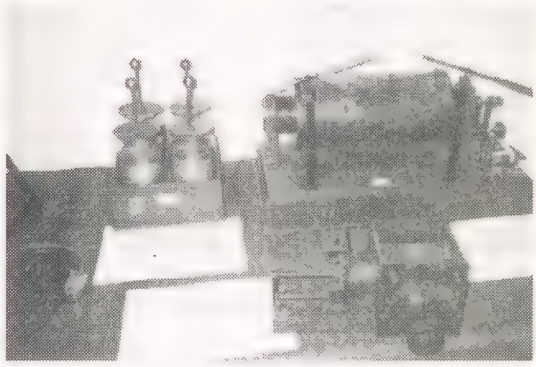


Photo 2. Commercial items from the early 1900s era loaned by the University of South Australia, School of Electrical and Formation Engineering. Box of four Leyden jars (each jar has a capacity of about 1000 pF); Large induction coil originally used to drive a five foot high Tesla coil (the base holds a capacitor, alternate layers of glass and tin foil sheets, to reduce the vibrator contact arcing). Tapped inductances variable coupler.

Our DX-Vacation to the 8Q-Maldives

July 2003

By Malcolm Johnson VK6LC(8Q7LC) and
John Gillespie K4JWG (8Q7JG)

(see also pictures on inside back cover)

After placing our 4wd DX-pedition East-West following the Tropic of Capricorn on hold, John and I decided to do something in style for a change. *No* tents and *no* baked beans. *No* back aches or nasty crocodiles. We chose the Maldive Islands for their warm weather and their Dx-location just above the Equator, as in July conditions were good from that latitude and very poor here in Australia.

The Maldive Islands are located approximately 500km east of the southern tip of India and run north-south for about 900km between the Arabian Sea and the Indian Ocean. They are 6,300km NW of Perth and 9,500km from Brisbane with 1,192 coral Islands to choose from. The Maldives was a British Protectorate until 1965 when the Country gained Independence. Prior to tourism, yellow fin tuna was the mainstay of the economy. It still counts for 40% cent of export earnings.

We now had the challenge of putting together a 100 watt portable station. The equipment was not the problem but our excess baggage weight was! We are allowed 20 kg only. Every kilogram over this will cost us $16 Aus. kg one way. My final weight came to 58 kg, FT990, FT840, power supply, coax, bits and pieces with a Butternut multiband Vertical and its radials. Between us both we totalled 40 kg, 18 kg or $576 Aus. over weight. We may have to go naked! So we had our toothbrush shorts and "8Q7" tee-shirt that was our tropical wardrobe for 18 days including transit. Singapore Airlines came to the rescue and gave us 30 kg donation. This brought our extra expenses down to $336 Aus. for the vacation, we thought. Wrong! On the return journey from Male to Perth my baggage was 59 kg less 35 kg, or 24 kg excess at a new carrier rate of $21.55 USD a kg. This equates to $517 USD or $858 Aus. Plus road freight $80 Aus. so my expenses to operate a 100 watt station cost $1,274 nearly the same cost for a return economy air fare.

For those that do not understand DXing, nothing is "free", including "QSLing". Next job was to road transfer 20 kg up to John in Mackay from Perth, this was his part of weight sharing.

After receiving our Maldives Licences and Customs Import-Export Licences for our equipment it was time to leave the cold weather behind and join the tropical temperatures of the Maldives. John and I left Australia, freezing, to meet in tropical Singapore for the day. Dave Rankin 9V1RH was our host. This was John's first visit to Singapore so there was much to see and taste. "Singapore Noodles" was right on the menu at Newton's Circus. Departing Singapore late that evening (Day 2, no sleep) we arrived on Hulhule Island, Male International Airport. This was the last place we could get a beer as the Maldives is a moderate Islamic State with a governing President. Just two kilometres in a Maldivian wooden ferry (Dhonis) and we were in Male, the capital island of the Maldives.

Male is about 3 square kilometres and accommodates around 270 thousand people, approximately a quarter of the islands' total population.

We were met by our hotel mini bus, and finally arrived at our destination quite dizzy as there are no main routes internal to the island, only small narrow paved streets that could just fit our mini bus. I guess we just died that night, and the big surprise came next morning when we looked from our hotel balcony. Everything was so crammed, and water was all round us.

We departed Male by sea plane, the general transport throughout the island resorts, again big problem for us and all our equipment. The general sea plane cargo was normally newly weds or honeymooners. What a pain radio operators must be to the air crews in a light aircraft. Our sea plane journey from Male to Kuredu Island Resort, 150 km north would take about an hour, so we and our equipment had to be split up. We decided this had to be our lucky day – the call sign on the sea plane "8Q-MAL". In fact it did turn out to be lucky.

En route the aerial views of the many atolls were an experience. The sights were so unbelievable, John's new digital camera sounded like a 50 wpm automatic Morse key. Deep, dark blue, tapering to a soft, aqua, light blue,

outlined the peripherals of the atolls and tropical Islands. We arrived at Kuredu Island Resort, our home for the next 14 days. We selected our air-conditioned 24 hour serviced beach bungalow right down at the end of the island out of everyone's way. Kuredu Island is located on Lhaviyani Atoll 05deg-33min N. 73deg-29min E. grid square MJ65rm. Zones CQ 22 and ITU 41. It's about 5 km long and about 2 km wide. The Island was just magnificent, very tropically wooded, protected by huge coconut palms. This we were to appreciate later for the shade and fresh coconut drinks on tap every day. Our bungalow was brick walled with a coconut palm styled roof, only 25 metres from the water's edge. It included a private beach where we mounted our vertical antenna and sprayed its radials all over the place which were later dug into the beach sand for safety. We could clearly see it at all times from our shack window and wooden terrace verandah, as well as the sunset.

We were met on arrival by a Maldivian Ham, Ibrahim 8Q7QC, who was the Kuredu Island Boat Master. Ibrahim was a warm friend to John and myself, giving us special treatment and ensuring we were made very comfortable. We had also the opportunity to try their special Maldivian curried tuna followed by ground coconut sweets.

Finally all the radio station was set up and time for a "cold beer" which we had to sign for as they are consumed and traceable. The European styled smorgasbord food at the restaurant was just unbelievable with friendly service. It was just as well we had a 2 km walk back through the tropical gardens to our beach bungalow after our meals, as we both ate far too much and needed to burn it off. No shoes on Kuredu. Just bare feet to tread the soft white sand.

During the World Wide IARU HF "ITU" Zones contest on 12th and 13th July my equipment was running red hot, but I could hardly keep my eyes open, so I have to confess I did not last the 24 hours. But I did really well on SSB and CW. By the end of the contest I had clocked up a thousand QSOs and written up around 102 DXCC countries. Conditions were excellent around the equator right through to South America, but no VKs. Propagation was not good to VK-ZL or North America. I thoroughly enjoyed the contest and was proud to represent the Maldive Islands this year.

Over the next week we just lazed around on the beach and enjoyed life Kuredu style. I went on the radio only 2 to 4 hours per day and this was enough for me. I retired from DXpeditioning and its hardships several years ago. I found a nice opening into North America in our early morning and worked many stations and my friends. Our island was about 5 hours behind Perth time and 7 hours behind Eastern Australian time. We were at one period running 5 time zones for our friends and UTC. Luckily I worked some of my friends on CW in Perth. It was very late for them. Kuredu Island Resort was on their own daylight-saving time, one hour behind Male time.

John kept in touch with our friends on the Australian 21.185 travellers net, the only contact we had with Australia for most of our vacation. For many days we could get into Darwin and Alice Springs only, then it happened on 10m working into Mount Barker and then 15m into Perth. John is still looking for his mates in Mackay. Maybe they all slept in! We did.

Weather was fine although the tropical rain appears each day and this is why it's so green and smells so fresh. The varieties, colours and shapes of the marine life were also magnificent. John enjoyed being out on the main ferry jetty each night to film the day's catch from local fishermen who supplied us with fresh fish daily. It was fun to feed the local tropical fish under the jetty's lighting. Every time you looked you saw something new.

Ibrahim 8Q7QC picked us up in his speed boat to visit his home, Naifaru Island, about 50km north of us. On the way we visited many of the islands, and were given a tour of the yellow fin tuna processing factory on Felivar Island.

At Ibrahim's home we experienced a typical Maldivian meal with his mother and father 8Q7AC, the first licensed ham in the Maldives. The day was spent strolling around his small island along the narrow paths and lanes to their village. We visited the very neat and clean local modern school where English is taught. Many educated Maldivians have been to Australian universities. They also have their own written language. John, being a retired male nurse, visited the Islands' hospital which was very modern, chatted with the staff and exchanged greetings from Australia to all. I, a retired electrical design engineer, headed for the power station and reverse osmosis cold water fountain.

It was beaut to ask and be asked questions with the Maldivians as there was not a language problem. We also created a rapport and friendship with the Island staff who were fantastic and enjoyed some Aussie humour. We did a lot of swimming both in the pristine swimming pool and around the Islands blue majestic waters. John and I can only say the professional staff and hospitality during the sixteen days on the Maldives Islands, plus the local Male Agents, Communications Authority and Air Taxi Transfers, would be something to beat.

I completed several thousand QSOs and clocked up 122 DXCC countries. Conditions through to Europe, Asia, Africa, Pacific Ocean and South America were the best for me and worked 10, 12, 15, 17, 20, 40 and 75m. Although it was difficult to work VK, I met a station from VK2 and within minutes we worked on 5 bands SSB. CW conditions were also very good as this location was noise free, but the pile-ups were too wide for me. My FT990 rig and the Butternut vertical performed without fault even through the tropic rain every day. My advice to other Hams considering a five-star holiday, is to have plenty of dollars if you intend enjoying your radio.

We spent our last day in Male where we hired a taxi for the day to see the sights and save our weary legs – remember we were doing this in style! We shopped, visited the markets, sampled local fruits and drinks, ice-cream and food, and stocked up with plenty of "Maldivian Curry" to bring home for our next 4WD trek across Australia – you guessed it! *Curried baked beans!*

Our last day went by quickly. We were noticing the heat now, not being shaded by coconut palms. Before we knew it we were back in Singapore and on our way back home to Australia.

Our operation was from 11th to 24th July 2003. 8Q7LC colour picture QSL is available. QSLing is direct only with return postage to VK6LC, 9 Abinger Road, Lynwood, Western Australia. 6147.

Thanks to the Maldivian People for a wonderful DX-Vacation.

ar

Technical Abstracts

Gil Sones VK3AUI
30 Moore Street, Box Hill South Vic 3126

Low pass filter

A low cost high performance low pass filter for all bands from 1.8 MHz to 50 MHz was described in QST November 2002 by Bill Jones K8CU. Such a design is useful now that many HF transceivers provide 6 metre coverage. The design was made to allow operation at 1.5 kW for operation within the American power limits. At our power limits it is

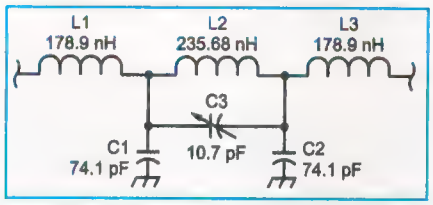


Fig 1. Low Pass Filter Schematic. C1, C2 74.1pF. 2 inch by 2.65 inch brass sheet sandwiching 0.03125 Teflon sheet to enclosure.

L1, L3 178.9 nH 3.5 turns 1/8 th inch OD Copper tubing 0.75 inch diam form 0.625 inch long with 1/4 inch lead length to solder to brass cap plate and connector.

L2 235.68 nH 5 turns 1/8 th inch OD Copper tubing 0.75 inch diam form 1.75 inches long 1/4 inch lead length for soldering.

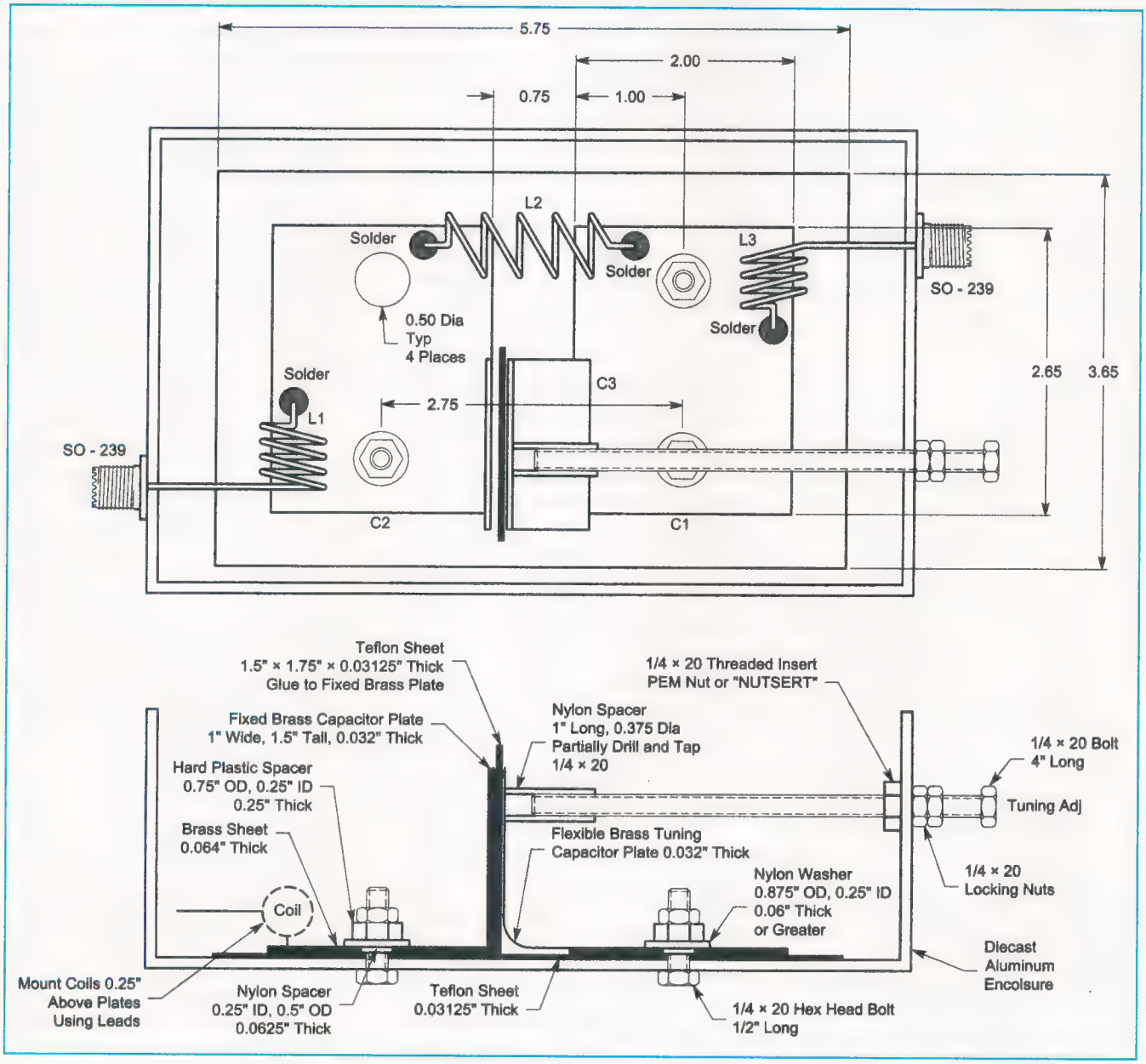


Fig 2. Assembly Drawing for Filter. All dimensions in inches

well within its design limits. The design should be easy to duplicate as the capacitors are fabricated from brass sheet and Teflon sheet.

The filter circuit is shown in Fig 1. The filter is built in an aluminium diecast enclosure. The filter layout is shown in Fig 2.

The adjustment of the filter is to optimise performance on the 6 metre band. C3 is set to a spacing of 0.1 inches. Terminate the filter in a 50 ohm load. Then using an SWR analyzer sweep through the 45 to 60 MHz region to find a region of low SWR. If this isn't found you should adjust the input coil L1 by spreading or compressing turns to find a low SWR in the 45 to 60 MHz region. If you want a symmetrical filter then it may be wise to reverse the filter and adjust L2 as well.

Then apply 100.2 MHz to the filter input and adjust the variable capacitor C3 for maximum attenuation through the filter. Recheck the SWR performance on 6 metre. If the low SWR region is not in the part of the band you use adjust L2 to bring it into the spot you want. Then readjust the 100.2 MHz attenuation for maximum. These adjustments may need to be made a couple of times.

If you cannot carry out the 100.2 MHz attenuation check a suitable result can be obtained by adjusting C3 and L2 so as to obtain a minimum SWR point in the part of 6 metre you use.

The filter response is shown in Fig 3. The filter SWR is shown in Fig 4 from 1 MHz to 55 MHz. The six metre SWR for the filter is shown in Fig 5.

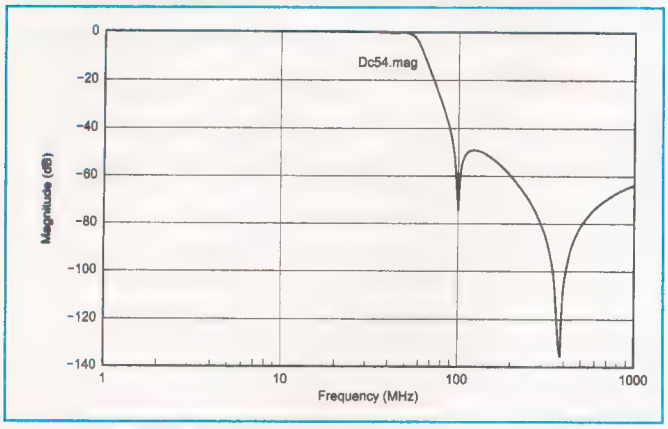


Fig 3. Filter Response 1 MHz to 1000 MHz.

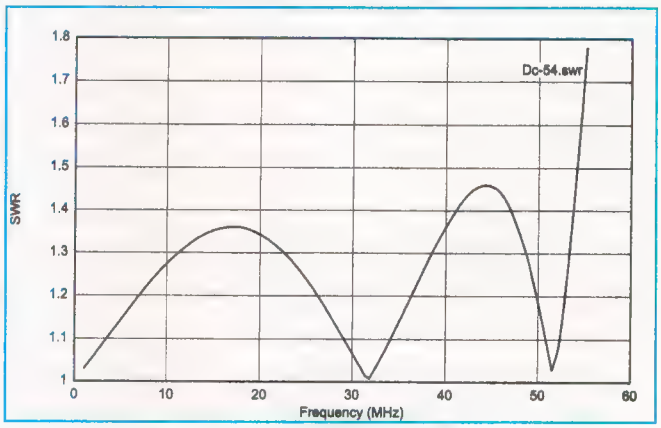


Fig 4. Filter SWR 1 MHz to 55 MHz.

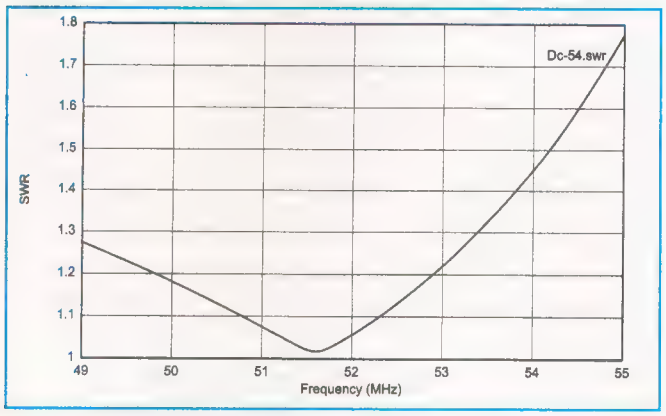


Fig 5. Six Metre Filter SWR

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http://www.wia.org.au

Silent Key

Gil Sones VK3 AUI

We are saddened to announce the recent passing of Gil Sones VK3AUI. A staunch supporter of Amateur Radio in general and *Amateur Radio* magazine in particular, his contribution to the community will be sadly missed. Obituary will be printed in January/ February AR.

Working 3B9C – a *How To* guide

Neville Cheadle G3NUG and Don Field G3XIT

(Adapted from RadCom February 2001 page 34 by VK5UE)

The UK-BASED Five Star Dxers Association (FSDXA) is mounting a major DXpedition to the Rodrigues Islands, Mauritius, in the Indian Ocean in 2004. The team expects to be on the air as 3B9C in March-April 2004 and operations will continue for four weeks including four full weekends.

The founder members of FSDXA comprise the UK-based core team that organized the February 1999 9M0C Spratly DXpedition (see RadCom April 98). The Association now owns the assets left over from Spratly. FSDXA is very closely associated with CDXC (Chiltern DX Club) - The UK DX Foundation

Objectives

There are two main and several subsidiary objectives:

- To provide the possibility for every amateur radio station in the world - even those running QRP or a very simple antenna - to make at least one contact with 3B9C; and
- To enable top DXers to put 3B9C in their log on as many bands and modes as possible. It should be possible for top DXers active on all bands and on all main modes to work 3B9C on at least 18 band / mode slots!

Other aims and objectives

- To use the DXpedition as a focus for increasing interest in HF amateur radio, especially among those new to HF, through magazine articles, presentations, an awards programme with categories for both new and experienced operators and clubs, etc.
- To use the skills of team members to help the islanders of Rodrigues through various activities currently in the planning stages.
- To test the StarSoftware server-based DXpedition software in the most demanding of environments, with a view to making it available to other DXpeditions in the years to come.
- To encourage activity on all bands and modes at a time when decreasing sunspots may be causing some operators to lose interest in HF and 6 m.
- To be one of the first major DXpeditions to link fully with the ARRL's "Logbook of the World" initiative.
- By setting and maintaining high standards of operation, to uphold and demonstrate the highest standards of DXing practice.
- To encourage amateurs to explore new bands and modes, by being readily workable on all bands and modes over an extended period (one of the pleasant surprises with D68C was the way in which many HF operators made their first forays on to PSK31 and on to 10 m FM especially to work the DXpedition). Specialist modes will include AO-40, EME and SSTV.

History

In 1998, 9M0C made over 65,000 contacts in 12 days. As a result of the feedback a "How to Article" was produced prior to the D68C 2001 DXpedition. The 2001 D68C operation covered all HF bands and modes, plus 6 m and satellite. There were 27 operators from 11 countries and some 168,000 contacts were made in 21 days.

How to

The following is an abstract from the 'How To' article and I hope some of the ideas in this article will be helpful to new operators on the HF bands.

DXpeditions, which are usually on the air for 10 to 12 days maximum, sometimes only cover a single weekend but this operation will run 4 weeks and four weekends.

Propagation charts from various locations will be available and they will be regularly updated on the web site at www.fsdxa.com/3b9c

Planned frequencies

The planned transmit frequencies will be on the web site. We will nearly always work split frequency and will regularly announce the frequencies on which we are listening. We will only make contacts on our transmitting frequency during the last few days of the DXpedition, if the pile-ups have disappeared. Regarding the frequencies, note that if there are other DXpeditions active in March/ April we may decide to change our transmitting frequencies to avoid confusion. Typically, a DXpedition SSB station transmitting on 14195 kHz will listen up in the range 14200 – 14220 kHz. If we find we are operating on the same transmit frequency as another DXpedition we will move down around 5 kHz, typically to 14190 kHz and we will then listen down between 14165 and 14185 kHz so as to avoid confusion.

Listen to the operator carefully. Each has been briefed to give the callsign at least every two QSOs and to announce the listening frequencies every five QSOs. Incidentally, we will not work by numbers; we feel that with good ears and equipment this is quite unnecessary

Best times/bands

Refer to the propagation charts on the web site

Suitable but simple antennas

A half-wave sloping dipole works well and measurements for seven of the HF bands are given in Table 1. This is a centre-fed antenna and one end should be sited as high as is practical with a

slope of round 30 – 45 degrees (not critical). The antenna should point in a north-westerly direction from Australia. As can be seen from the table, total length of a half-wave dipole for 24 MHz is only 5.7 m, so it should be a relatively simple antenna for most amateurs to erect by attaching the top end to a tree, chimney or gutter. Feed with 50 or 75 ohm coax, with the centre conductor to the higher half and the outer to the lower half. Seal the feed point to keep out moisture (e.g. by moulding Blu-Tac around it) and hey presto, an effective single-band antenna.

Believe, us, you will be able to work 3B9C with an antenna like this. For simplicity and effectiveness, we do recommend single-band antennas over many multi-band designs, which are often a compromise solution.

Band MHz	Dipole length feet	metre
7	66.0	20.1
10.1	46.3	14.1
14	33.0	10.0
18	25.8	7.86
21	22.0	6.70
24.9	18.8	5.73
28	16.5	5.00

Table 1: Lengths of half-wave dipole antennas

Working split

All well-organised DXpeditions nowadays work split frequency. What does this mean? DXpeditions transmit on one frequency and listen on a different frequency. For example they will transmit on 28495 kHz and listen between 28500 and 28520 kHz. Why? There are two reasons:

1. If the DXpedition station listens on the frequency on which it is transmitting, it will not be heard, by those calling because of the pile-up on that frequency.
2. The DXpedition operator will be faced with a huge barrage of calls and will not be able to differentiate between them if they all call on the same frequency.

Experienced DXpeditioners will tune slowly up and down their listening band. Listen to the stations working the DXpedition and establish the operator's tuning pattern. Work out where he is likely to be listening next and then call – bingo. Never, ever, transmit on the DXpeditions transmitting frequency unless the DXpedition says, "Listening this frequency".

Of course, you may have a transceiver, which doesn't allow split-frequency operation. In this case you may have to wait until later in the operation, or perhaps you can borrow a friend's rig. All transceivers built in the last 10 years or so allow split-frequency operation. On CW, generally all you will need to do is set your receiver to the 3B9C frequency and then use XIT (transmitter incremental tuning) to offset your transmitter by the necessary split (See your transceiver manual if you haven't had occasion to do his before). Activating RIT (Receiver increment tuning) will allow you to hear the calling stations, while leaving your main receive frequency on 3B9C.

RIT and XIT usually only work for splits of up to 10 kHz, which may not be sufficient for SSB operation. In this case you need to bring your second VFO into operation. Set, say, the 'A' VFO on the 3B9C frequency. Set the 'B' VFO on the frequency where 3B9C is listening and activate transmit on 'B', receive on 'A'. Again your transceiver's manual will explain how to do this,

When 3B9C responds to your call, the exchange will consist simply of an exchange of signal reports. Make sure the 3B9C operator has your callsign correctly. The reason for the short contest-style exchange is simple: the expedition operators want to maximise the number of people who get a chance to work 3B9C, so contacts are kept as short as possible. There will be a log look-up facility on the 3B9C web page so you can be sure that you are in our log. It not, do feel free to have a second attempt. If your contact is indeed OK, please try to work us on other bands.

Nevada Trophies

The *Nevada Comoros Trophies* offered as part of the D68C DXpedition for working band-slots were extremely popular with DXers, with the winners working *D68C* on 23 band-slots. Trophies were also available to clubs, to encourage their members to be active and work D68C either from home or perhaps from the club station. During the 3B9C DXpedition we will be running the *Nevada Rodrigues Trophies*. The rules will be broader than those used for the Comoros and there will be continental awards as well as awards for clubs outside the UK. There will also be special awards for newcomers to HF. Details will be available soon.

Sponsorship

A significant number of sponsors including Yaesu (UK) Ltd & Nevada, is already supporting this DXpedition. A colour brochure has been prepared about the project and this has recently been circulated to DX clubs throughout the world.

We very much hope this article has inspired those of you who are inexperienced in DXing to have a go and work 3B9C. You could be pleasantly surprised at what is possible. We look forward to putting your call in the log.

Further reading

DXpeditioning - Behind the Scenes, edited by Neville Cheadle, G3NUG, and Steve Telenius-Lowe, G4JVG, is "by far the most complete 'how to' reference available. (N7NG).

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How to get into ham radio and *why*

Scotty VK2KE

If you have never been into ham radio but are curious this might whet your appetite.

Ham radio has been around for a long time and it has suffered from a lot of competition. During wars, it is stopped so the Government can access a lot of frequencies and perhaps stop clandestine operators, so activity suffers until the war is over.

When TV started in 1956 ham radio took a back seat as everyone was captivated by the new medium. Then in 1974 colour TV came in and guess what? – everyone started staring at the goggle box big time. Then the video craze (read VHS and Beta) started and everyone was watching videos, so once again ham radio took a bit of a dive, now the TV rage is settled down, and video games and the Internet have come along.

So are there still some ham radio operators still around? Yes, but probably in reduced numbers.

One thing that ham radio can clearly do is to survive the onslaught of new technologies, however it does suffer as the telephone and now the mobile phone has no doubt had an impact. But ham radio will probably continue to survive because it is so resilient.

When you look at it, ham radio can offer you *so* much. Let's look at all the modes and activities you can engage in once you get your licence. There is working DX on the high frequency (HF – 0 to 30MHz) bands, competing in contests, operating on VHF or UHF, - either on simplex or via repeaters, slow scan TV, fast scan TV, field days, moonbounce, satellites, 'rag chewing', mobile and portable operating, marine mobile, aeromobile, hand held sets, fox hunts, DFing hidden transmitters, morse code, packet radio, teletype, and building your own gear- "home brewing" as its called. You can even chase contacts on air so that an Award Certificate can be attained. There's bound to be more but let's discuss these in a little more detail and then you'll be able to make up your mind if this hobby is for you.

Working DX

This where you operate on the HF bands and talk to someone across the country or overseas. In fact DX means "long distance", so you might be talking to Japan, the UK, Canada, the USA or NZ for instance. The best DX bands are 80, 40, 20, 15 and 10 metres. I would contend that the use of the ham radio bands will rise again because people will become tired of using the Internet and sending emails. The main attribute of ham radio is that you can talk to someone out there and have a decent live conversation with a person in real time and you really can't beat that. People like to converse with people and ham radio is great for that activity.

I liken ham radio, especially on HF to 'going fishing' as you get out there and you just don't know what you might 'catch'. Sometimes a contact can lead to a really great and very stimulating discussion with the other operator. Another activity still happening on the HF bands is 'nets'. This is where there is a net control station that controls proceedings and then everyone can call anyone in the net in an orderly way. Some people don't like this form of operating but others swear by it.

VHF and UHF Bands

Operating on VHF (30 to 400MHz) and UHF (400MHZ up). As you would probably know VHF and UHF are 'line of sight' bands, where range is restricted mostly to line of sight short range contacts. Sometimes, however, the range is considerably extended by aircraft condensation trails, meteorological conditions or meteor showers, so you just don't know what might happen on some days and nights when you're at the radio controls in the shack. You can operate directly to another station, who might be at home, in the car or portable and this is done on one frequency, so you each get a turn to speak to each other and sometimes this can be in a net with a number of stations together. This kind of operation is called 'simplex'.

You can also have extended range on these bands by use of a repeater. The repeater is located on a mountain top and receives you on one frequency (uplink) and then transmits you out with great range on another frequency (downlink). This is called duplex operation. By this means you can reach out to much greater distances than is possible on simplex. I was having a conversation with some operators in Melbourne one Saturday when a Tasmanian station was heard to break in. He was brought into the net and we had a long discussion. I rotated my beam south instead of north and he was rock solid for some hours. This was probably due to an inversion over the Bass Strait at the time.

Slow scan TV

Slow scan TV is a mode whereby you can transmit and receive pictures in colour. The images are 'still pictures' but they have pretty good resolution. You can send these pictures over very long distances as they are sent line by line fairly slowly thus giving good immunity to noise and fading problems.

Fast scan TV

Fast scan TV is limited to the UHF bands and can be a lot of fun as you can

transmit moving pictures and sound just like the ABC and commercial channels.

Field days

Field days are a lot of fun as there are many activities including trash and treasure stalls, demos, displays, technical talks, and fox hunts. They are held all over the country and are often run by local Radio Clubs

Moonbounce

Moonbounce is a very specialised mode where you transmit a morse code signal to the moon and it reflects the signal back down to earth over the horizon.

Satellites

Satellites are very prominent in ham radio and you can access a number of satellites to communicate over long distances, in a way they are a form of repeater but are orbiting in space rather than being on a fixed mountain top.

Rag chewing

'Rag chewing' or 'chewing the fat' is where you contact another operator, or maybe even on a net, and just talk and talk to each other for sometimes many hours on almost any subject.

Mobiling and portable

Many hams have operated mobile but as the laws have clamped down upon using a microphone while driving, it has certainly curbed a lot of activity. I used to drive to work each day in Melbourne and talk to the regulars from my car whilst in the traffic. We used to have the 'Monday mumbles', the 'Tuesday twaddle', 'Wednesday waffle' etc and a great many discussions were held. It was the real drive time of the day in the morning and at the end of the day. This was usually on the main Melbourne repeater 'RML' which gave great coverage, -it brought together many people who would otherwise not have been able to get in contact via simplex channels. Before repeaters, I can recall not long after I got my licence in 1958, we used to home brew a transmitter and make up some sort of receiver and talk on crystal locked channels from car to car as we went to and from work each day. Of course we contended with a great deal of noise and fadeouts as we got out of range of each other but it sure did relieve the daily monotony of fighting the traffic! Many of us used to go portable in national and state parks for a weekend and this was fun. I guess it still can be done if you have the wish to go out there and do battle with the elements and put up your own antennas. One field day, in the '50s the Moorabbin Radio Club set up a portable station in Wonga Park near Melbourne and we had operators on 80,40,20,15 and 10 metre and had a great deal of fun working all over the country and to overseas DX countries for a whole weekend. Some of our operators were on morse (CW) and some on phone (and this was AM (Amplitude modulation) not SSB (Single Sideband) if I recall rightly). Well this sort of activity is still possible if a small group gets together and organises it. (Our generator ran out of fuel at a critical moment in a contact (QSO) with a Norwegian ham, but that's all part of the fun of being portable).

We held one field day in a large

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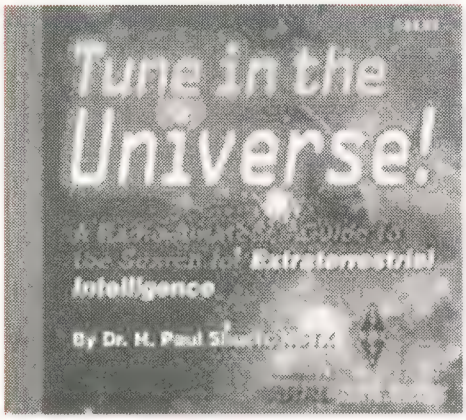

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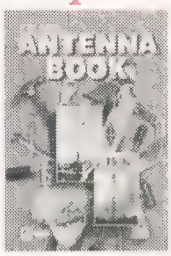

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paddock out west of Melbourne at Rockbank. The name 'rock' was especially apt as the paddock was littered with sump-gouging rocks, but we had a great time and it was added to by a one radio club member who had a Jag and a large caravan in tow. On the drawbar he had a socket into which plugged a set of pipes and these pipes were telescoped into each other to become the mast on which a 20 metre beam antenna was installed. Needless to say a lot of good DX was heard and worked. This sort of activity can still be done if you want to go camping and have some fun. Nothing quite like finding snakes and spiders in your gear as you operate!

Radio clubs are great places to meet people who are into the same sort of aspect of the hobby as yourself and can get technical advice and assistance from each other.

Aero and marine mobile

I've tried my hand at aeromobile from light aircraft in a few places. Usually on 2 metre FM using a small hand held transceiver. The range of coverage from a few thousand feet is amazing. I once worked a ham who was flying 707 freight planes from NY to LA and he passed the time in flight by working DX on 20 metre.

Another contact I had was with a bloke who was ferrying light aircraft from NZ to Oz and he had a wire antenna out of the tail and worked us on 20 metre until he had to drop into Lord Howe island for fuel. Many hams go on marine mobile as there are plenty of people who cruise the oceans in their yachts and have ham radio on board. I once worked a YL (young lady) ham, who had her yacht in dock in NZ for repairs and defouling. She passed the time away by having HF contacts with all and sundry while in port.

One of the most fascinating contacts I've ever had was working a ham in Ecuador. He was backpacking with a very light low power transmitter up the sides of an active volcano in that country. When Dick Smith was chartering the 707s to go to the Antarctic, he had 20 metre radio on board, and we had some great contacts with his plane as he flew over the icy wastes down there.

Fox hunts

These can be a real hoot. I was in one once in a park near the Yarra when the rig started to create great volumes of smoke. We found we had a short on the 12 volt battery lines and the fuse was very rapidly pulled out to save the car. I can't quite recall if we found the fox in all the panic but it sure was fun. One of the most historic foxhunts was held in Parkville when the hidden fox transmitter was placed in a baby's pram and was being innocently wheeled around the park. None of the hounds was game to challenge the couple wheeling the pram as to whether the baby was secreting a transmitter in the blankets.

All of the above, and more I could go on with, should serve to show that ham radio has an amazing range of aspects to it. There's something for everyone in it. It's often just up to some imagination and drive to get something done and along the way you can have the experiences of a lifetime. It really is the communicator's hobby.

Federal WIA Convention

Appointment To Federal Positions

The WIA Federal Convention and Annual General Meeting of the WIA will be held in Brisbane on 2nd, 3rd and 4th April 2004.

At this meeting, a number of positions will be filled. Nominations from interested persons must be received by the Federal Secretary at the registered office of WIA Federal in Melbourne no later than close of business on 20th February 2004.

The positions are:

(A) Federal Executive

- President
- Directors (3 positions to be filled)
- Company Secretary

(B) Officers and Coordinators

- Editor "Amateur Radio" magazine
- Publications Committee
- WIA/ACA Liaison Committee
- IARU Region III Liaison Officer
- ITU Conference & Study Group
- Federal Web Page Coordinator
- Chairman, Federal Technical Advisory Committee
- Federal Education Coordinator
- Federal Historian
- AMSAT Coordinator
- Intruder Watch Coordinator
- Federal Contest Coordinator
- Federal Awards Manager
- Federal WICEN Coordinator
- International Travel Host
- ARDF Coordinator
- Federal QSL Manager
- VK9/VK0 QSL Bureau
- QSL Collection Curator
- Videotape Coordinator

Nominations received direct will be considered but preference is likely to be given to Divisional nominees

Peter J. Naish, VK2BPN
Federal Secretary

Letters

from Lindsay Lawless VK3ANJ to ACA

Lindsay Lawless
Phone 03 5155 1380, email
linlawless@net-tech.com.au

Reference Radio Frequency Interference (RFI) from split system airconditioners

My recently purchased Fujitsu non-inverter type air conditioner produces severe RFI centred on 10 MHz. The interference makes WWV time and other information unreadable. The unit is located 15 metres from my communications receiver and the RFI strength exceeds that of WWV by 3 S points on the receiver S meter.

I believe that indicates that RFI emanation from the unit exceeds the specified allowable.

I referred the fault to the Fujitsu office in Sydney and was advised that the condition was probably caused by the system processor and associated circuitry. I was also advised by a Fujitsu rep. on 2/9/03 that a "service agent" would contact me and arrange an investigation and possible replacement of the processor and circuitry. I have had no further action from Fujitsu.

I would appreciate your advice please on what further action is available to me to obtain correction. It seems to me that ACA should enforce the RFI regulation by (a) installation audit or (b) requiring the installer and manufactured to record on the "Compliance Certificate" the measured RFI field strength or (c) provide written assurance by a suitably qualified technician that the installation does comply.

For my own information I would appreciate your specified maximum allowable RFI field strength emanation from airconditioners and similar devices which use microprocessor performance control.

from ACA to Lindsay Lawless VK3ANJ

RFI from Split System Air Conditioners

Thank you for your correspondence of 9 October 2003 concerning Radiofrequency Interference (RFI) from a Fujitsu split system air-conditioner. The Chairman has asked me to respond.

As you are aware, the Australian Communications Authority (ACA).lias established Electromagnetic Compatibility (EMC) regulatory arrangements, to manage incidental radiofrequency emissions from electrical and electronic devices. These arrangements require manufacturers and importers to declare conformity to standards that set maximum levels for conducted and radiated incidental emissions. The standard that applies to domestic single phase air-conditioners is AS/NZS 1044 (or its equivalents CISPR 14 or EN 55014). Three-phase air-conditioners are currently outside the scope of the regulatory arrangements, however three-phase air-conditioners supplied after 7 November 2003 must comply with the regulatory arrangements.

In your letter you requested information on the emission limits. It is beyond the scope of this letter to detail the applicable terminal voltage, disturbance power and radiated disturbance power limits, as these depend on the type of device, certain device parameters and frequency. I refer you to the standard, which can be purchased from Standards Australia. In regard to enforcement, the EMC regulatory arrangements provide that manufacturers and importers of equipment subject to EMC standards must keep documentation (for example test reports). The ACA audits this documentation on a random basis, or during the investigation of a written complaint. The ACA's audit program does not extend to audit of devices once they have been supplied and installed. Responsibility for compliance of installed devices rests with the owner of the device.

In your letter you said that the RFI was centred on 10 MHz, and made the WWV standard frequency and time signal unreadable. The ACA regards such shortwave radio reception as fortuitous, and does not as a rule afford protection to such reception. It is also important to note that while the standard applies to (mains) terminal disturbance voltages from 148.5 kHz to 30 MHz, the standard does not apply to radiated disturbances below 30 MHz.

The information you have provided in your letter is not sufficient to demonstrate that the air-conditioner is covered by the standard, nor does the presence of interference demonstrate that the device is non-standard. In order to investigate the matter our regional staff will be in contact with you to obtain specific details of the model of air-conditioner concerned. If the air-conditioner is subject to the standard, the ACA will investigate the matter you have raised by auditing the compliance documentation held by the Fujitsu. The ACA's role is limited to determining that Fujitsu hold the required compliance documentation substantiating compliance with the standard, and taking appropriate action if Fujitsu does not hold such documentation. The suitability of the air-conditioner for your particular circumstances, and the possibility of a fault condition in the device, is a matter between yourself and Fujitsu.

Should you have any further queries please contact Mr Tony George, Manager, Compliance and Technical Services, Customer Services Group, on (02) 6219 5352 or tony.george@aca.gov.au.

Yours sincerely

Maureen Cahill
Executive Manager
Customer Services Group
29 October 2003

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Andy VK3IV

Intruder Watch

Henry PHS7nk

Chasing the baddies

If any changes this month, there seems to be an ever increasing number of intruders taking over the Amateur Bands.

VK6XW reported over 130 Intruders, majority Indonesians, on the 14MHz band. Rest of them were other Asian Intruders, including fishing boats.

A lot of Indonesian fishing boats have been escorted into Darwin, as they were caught fishing inside Australian waters. They use amateur radio VHF frequencies for ship-to-ship communication.

VK2UW reports 'pirates' in the Pacific using amateur radio callsigns, such as VK4ZLY, ZL and American Callsigns/VK using the 14 MHz band that are a big nuisance to VK2UW NET. Very few amateurs have a good six element beam and accurate bearing readout, so almost impossible to locate these 'pirates'. They could be all over the Pacific from New Zealand up to Solomons, some French speaking and no French speaking amateur available for translation.

VK4 reports A3E station on 14230 at 2159 who was giving out a list of shortwave frequencies before closing down at 2200.

There are also pulse modulated stations 14225 and 14240.

Pyong Yang is still on 14250 on a daily basis. UI high speed data stations are also heard below 14100. VK4 also reported 14 unidentified intruders, majority also on the 14MHz band.

VK7GW reported the 'Asian CW' at the bottom end of 14MHz. These intruders have been heard just below 14MHz and also on 14100.

GOOD LUCK chasing the intruders.

Cheers de Henry in HUMPTY DOO PHS7nk

International Amateur Radio Union

Region 3

B.L.Manohar "Arasu" VU2M
Regional Monitoring Systems Co-ordinator

While non licenced Indonesian pirates are well known users of amateur frequencies in the 7,10,14,18,21 and 28 MHz bands, a parallel growth of users of amateur radio frequencies, are the Fishing Trawlers in South Asia. The foremost among them at the moment are the Fishing Trawlers from Sri Lanka. They were fabricated and equipped by Korean Companies, who have installed amateur radio equipment for the marine communication. These trawlers have found the amateur frequencies the most favoured and useful for their routine chats. They are found to use more than one frequency simultaneously on every band, viz, 7,10,14,1 8 and 21 MHz amateur bands.

They are proficient in Sinhala only and no other language. Have not heard anybody requesting them in Sinhala to vacate the frequency. But, several others, have tried other languages and found that the language of QRM is the only one which makes them move.

As no call signs or names or any other operator identification is not forthcoming, we are unable to file complaints to Sri Lankan Authorities through the established procedures. I am sure the RSSL Governing Council has noted all the reports that are listed in these newsletters, for possible reporting to their Authorities.

Another regular BC station heard on 14280 kHz, is in Pashto/Dari from around 0130 UTC till sign off around 0200 UTC. It has a strong carrier, but a weak modulation. A possible Id is "Radio Bernaani Azaadi". Is it from any Tadhzhikistan location ? Feedback from monitors in Middle East and Europe is requested.

VK Amateur Radio Calendar 2004

This is a first stab. The dates are those I have picked up from articles. Would event organisers please advise the Editor when dates are confirmed. I thought I could publish this every three months.

Contests

January	February	March	April	May	June
Ross Hull to **18th** Summer VHF UHF Contest **10th/11th**	ARRL International DX Contest	John Moyle MemorialField Day **20th – 21st**	Harry Angle Sprint **24th**	QRP Day **15th** VK/Tasman Contest **22nd** SSB	VK/Tasman Contest CW **5th** Wadda Cup 80m

July	August	September	October	November	December
ZL Memorial 80 metre Contest **3rd** ZL/VK 160 metre Contest **17th** Jack Files Contest	Remembrance Day Contest **14/15th** ALARA		Oceania SSB **2nd/ 3rd** Oceania CW **9th/ 10th**	Spring VHF/UHF **13/ 14th**	Ross Hull **26th – Jan 10th 2005**

Conventions and Field Days

January	February	March	April	May	June
	Central Coast Field Day Wyong Racecourse **29th** Gosford Field Day VK3GH Hamfest Healesville	Eastern and Mountain District Field Day Heathmont **20th** Bass Amateur Radio IRLP Group Hamfest, Boneo	WIA Federal Convention **2nd – 4th** Urunga Field Day Midland Amateur Radio Convention Castlemaine	MDARC Hamfest Glenwaverly Brisbane ARC BARFest	Port Macquarie Field Day Oxley Region ARC, Buller Street SERG Convention Mt Gambier **(Both on Queen's Birthday W/E)**

July	August	September	October	November	December
Gipps Tech Churchill **3rd/4th**		North Queensland Amateur Radio Convention James Cook University SUNFest, Woombe Qld **11th** Central Highlands ARC Monster Auction, nr Emerald	Riverina FD Wagga ARC	AHARS Buy and Sell	

International Events

July	August	September	October	November	December
	International Museums International Lighthouse weekend **21st/22nd**		JOTA **16th/17th**		

Central Coast Amateur Radio Club Field Day – Wyong

Sunday 29th February 2004, Wyong Racecourse. Gates open 8:30.

Admission $10 Concession: $5 Children U/12 free

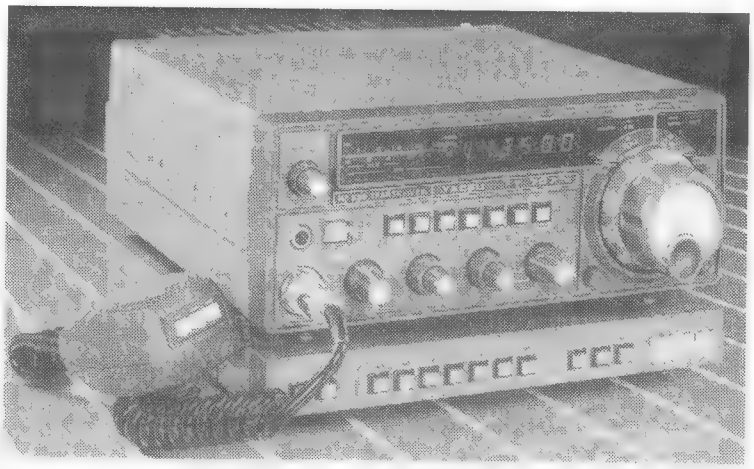
For more info Ph: 02 43402500 Web: www.ccarc.org.au

Amateur transceivers I have owned...

FT-707

Steve Mahony VK5AIM

Now that all amateurs have access to the HF bands we expect to see more activity and a group of amateurs looking for HF gear for the first time. Some of these up grading and newly licensed amateurs may not be able to afford one of the "new black box" transceivers, priced at $3000 or more. You do not need all the "bells and whistles" on your transceiver to get "on air" to have an enjoyable QSOs. Second-hand or "pre loved" AR equipment can and will get you on the air at 1/4 to 1/2 or less the cost of a new unit. It would be a shame to loose some of these keen new HF operators because they felt they could not afford a suitable transceiver. I hope over the next 12 months or so to review some of these "pre loved" transceivers.



The dos and don'ts of buying pre-loved gear

One warning I wish to make is to be careful of equipment in certain situations. If you visit the seller's shack: Is it reasonably tidy? Is the equipment in reasonable condition, clean, lights work, complete with knobs and controls? Can you hear and see it run into an antenna on all bands, all modes? If the seller has a good dummy load/watt meter, see that it puts out the correct amount of RF power. Ask why he/she is selling the transceiver! Has he/she bought a new replacement?

Deceased Estates can be a source of good working gear. It was probably being used and working well before the owner became a silent key. Unfortunately one usually can not try it out before buying. Beware of equipment used by heavy smokers. The tobacco smoke/fumes can get in everywhere and dirty electrical contacts, like switches etc. Cleaning can be difficult but if the price is right and you feel capable of cleaning the unit thoroughly, it may be a bargain! Club "Buy & Sell" days are another source of used equipment. The seller/owner is usually standing there offering the gear. You can size them both up. He/she can tell you why it is for sale. Some clubs offer a test site and with the seller's permission, you can try it out. A chat to fellow amateurs may reveal any idiosyncrasies of the particular transceiver. Buying from "Hamads" in AR or on the Internet can be a risk especially if it is from interstate. If the seller is in your state or even in your city it is easier. It's good to take a knowledgeable amateur friend with you in these instances. If you know the seller from QSOs you may have had with him/her its even better. You may have even heard the unit on the air. I have purchased simpler equipment i.e., ATU, SWR meters from interstate amateur sellers with no trouble. One piece of AR equipment that I owned and used over 20 yrs ago, was the Yaesu FT-707. The FT-707 came out in about 1980. It was an all solid state HF transceiver, covering 3.5 MHz to 29 MHz, LSB, USB, CW, & AM. Nominally 100 W SSB Out, 50 W AM. It required 13.5 V DC at 20 A to run it. All the usual features were available, VOX, NB, ALC, 2AGC ranges, and a clarifier. It also had IF band width control 300 Hz to 2.5 kHz. On the rear, besides the massive beat sink and cooling fan, it had the usual DC input socket, PL259 antenna socket, key, speaker, PTT, and 2 Din type sockets for the remote digital VFO.

My FT-707

The pictures show the front views of the transceiver and its accessories. The front panel is dominated by the large tuning knob, with a nice feel. The set has a nice digital display of 6 digits, 10s of MHz to 100 Hz, the knob also had analogue calibrations, all illuminated in a soft green glow. There is 100s of kHz on the outer, 10s of kHz on the inner, with calibrations of kHz in between. You could set the frequencies quite well with this dial. The "S" meter was a sign of things to come. A Led Bar Graph. Green to S9, Yellow to +20, and Red to +40/60. Excellent to read when mobile. It also reads ALC or RF Power Out. The rest of the panel was taken up by the usual controls. Starting from the left Mic gain, Carrier, Power On/Off, Phones, Mic socket, Mode Switch, RF/AF gain, Clarifier, IF Width Control and Band Switch. Along with push buttons for Mox, AGC, 25kHz Marker, ALC, FIX crystal locked frequencies, NB, and Clarifier. The VOX and VOX delay are 2 small knobs just below and each side of the lovely big tuning knob. The designations are white on the grey and

khaki painted case (popular at the time). It is relatively compact for the 80s. 93H X 24OW X 295D. It weighs 6.5 kg. With the name of the "Wayfarer" it is surprising that there is no folding handle on the side.

I used my 707 both as a home station and portable/mobile. At home it was used on 80,40,20 and 15 metres most times with no complaints. Strong locals did not worry it. Mobile operation in the metropolitan area is a waste of time to me. QRM from older cars, petrol stations, TAB shops, they radiate massive amounts of RF noise. I had motor bike's ignition noise obliterate "S9" +20 signals on 7 MHz. I believe the spark signal radiated from some of the motor bikes is greater than Marconi's first signal across the Atlantic! You can hear them before you can see them. Once you get out in the countryside it is much quieter. I have worked Gs, Ds, Es, and Ws, with the FT-707 into a Kenwood MA5 Mobile Whip on the VW Camper Van, bowling along a county road at 80 ks. The Noise Blanker worked well on my own ignition noise and other peoples.

I had the FV-707DM digital VFO, the FC-707ATU along with the FP-707 AC Power Supply. The Rack Mount shown in the catalogue looked as if it had been made with bits bought from your local hardware store, not worth the money. I held the Transceiver, the VFO, and the ATU together with a pair of aluminium side plates via the mounting screws. Painted a similar khaki colour it looked neat. If the preloved transceiver you have the opportunity to buy has the FV-707 VFO, it is worth having. It may not have all the memories the modern transceiver has, but it is excellent for mobile operation, along with the UP/DOWN buttons on the Mic. It also lets you work "Split" for the DX nets. It was a sign of things to come in transceivers.

The FC-707 ATU is neat and slim. The internal 100 W dummy load can be useful. Another amateur and I had an amusing incident with this function. We were trying the set up our mobile in the campervan. I was driving and Tony was sitting in the back trying it all out. Next thing he says, "Something is wrong with it! It's dead on all bands, you had better stop, the antenna must have fallen off." We stopped and I got into the back to check things out. The antenna was OK but the set was "dead". I looked at all the controls. There on the ATU the little green Led above the dummy load push switch was lit. I turned it off and the set burst into life! We looked at one another and burst out laughing.

If you are a newly licensed Amateur and looking for AR equipment that won't break the bank, the FT-707, with or without the auxiliary equipment in reasonably good condition is worth having. Take my advice, along with that of other experienced Amateurs, and keep an eye open for such a transceiver.

For Portable operation the FC-707 ATU enables you to work into "Stealth" antennas. The SWR Meter is a good size and is illuminated at night. A 66 ft length of Green coloured hook-up wire can be thrown up into a gum tree, watch out for the Koalas, with the aid of a scruffy old tennis ball. An earth stake, an old screw driver is OK, driven into the ground and connected to the earth of the tuner, lets you work the "Longwire" against ground. Try using a big battery clip onto the Tap/water pipe often close to your caravan site. You may have to vary the length of the Longwire to make it load up on your chosen bands.

For Mobile use I modified the Yaesu YH-2 Boom Mic/Headset used on the FT-290R, to work on the 707. It worked well, rolling along the highways. With the VOX facility it made life easy, but there was a trap! As there is no switch to switch the VOX off or on, you had to remember to turn the control back to zero, other wise if you took your headset off, left it say on the dashboard, all the world heard all the chatter, coughs, sneezes and F ... s. I stopped using VOX after this happened.

The FP-707 power supply runs the whole station with ease. With the speaker built in, you don't have a loose speaker to worry about. The PSU has never blown a fuse, primary or secondary. In the warmer weather it has only got warm, along with the heat sink on the transceiver. An added feature is a pair of red and black terminals with the 13.5 V DC on the back. This enables other equipment, say 2m FM to be used at the same time. I used to run my FT-290R this way.

The whole set up, FT-707, FV-707DM, FC-707 ATU, and FP-707 PSU, makes a neat set up, for home or portable.

If you are a newly licensed Amateur and looking for AR equipment that won't break the bank, the FT-707, with or without the auxiliary equipment in reasonably good condition is worth having. Take my advice, along with that of other experienced Amateurs, and keep an eye open for such a transceiver. I still have an FC-707 ATU and an FP-707 PSU, which has been in almost daily use for the past 20 or more years with no trouble at all.

All the best to the new Amateurs on HF.

Steve VK5AIM.

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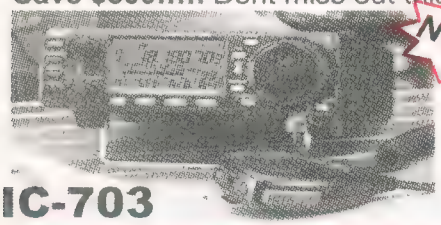

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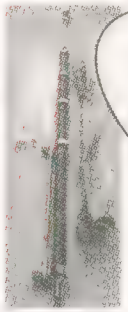

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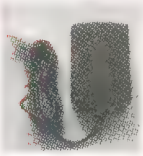

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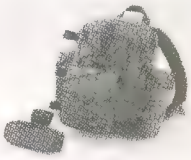

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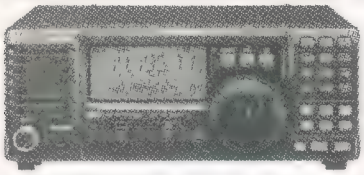

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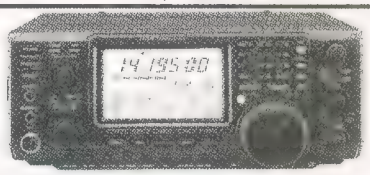

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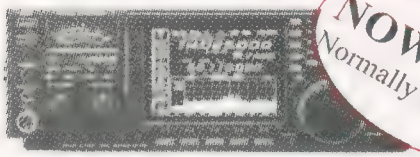

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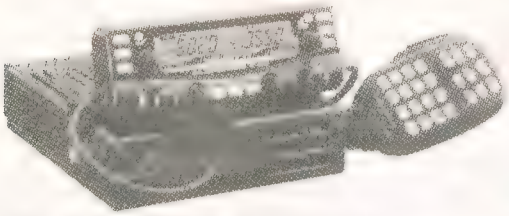

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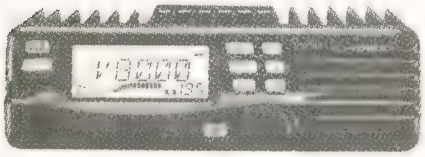

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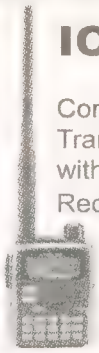

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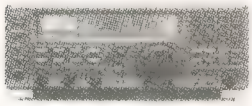

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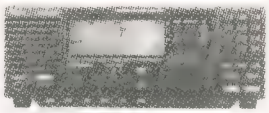

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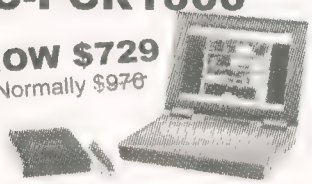

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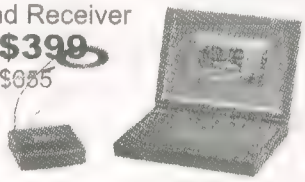

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Division News

VK1 News

Forward Bias

Peter Kloppenburg VK1CPK

The guest speakers at the October general meeting were Kerry Richens, VK1KRF and Gilbert Hughes, VK1GH. Kerry's subject was the measurement of antenna characteristics. This subject has come to the fore recently because the Division now owns an HF/VHF SWR Analyzer Model MFJ-259B for use by members of the Division. This device measures antenna characteristics such as Standing Wave Ratio (SWR) and impedance among others. An analyzer like this is very useful during the adjustment and tuning stages of antennas. It tells you whether the antenna is resonant and provides a pure radiation resistance or if the antenna has an impedance consisting of resistance and reactance (Inductive or Capacitive) at the frequency of interest. Kerry explained that the analyzer is also capable of measuring the velocity factor of coaxial cables, matching circuits, baluns, return loss and reflection coefficient, and distance to fault on lines.

With the use of graphics, Kerry explained how the analyzer's computer determines the magnitude and angle of the impedance presented to its input and how these factors change with frequency. A follow-on was a presentation on Time Delay Reflection (TDR). Kerry said that this technique is used mainly on coaxial cables and lines to determine if there are any irregularities or bumps along the length of the cable or line, and, if not, what the reflection(s) caused by the cable termination look like on a Cathode Ray Oscilloscope (CRO) connected to the pulse generator.

Gilbert gave a practical demonstration of how to the use the analyzer to find the resonant frequency of a dipole. He showed first what impedance the dipole presented to the analyzer when connected directly to the antenna terminals, and then how the impedance changed when the analyzer was connected to the dipole via a random length of coax. Gilbert said that when the dipole is operated at its resonant frequency, it presents a pure resistance of 72 ohm (in free space). Coax cable of 72 ohm (RG-59) will match this resistance perfectly. However, when this same dipole is operated off-resonance it presents an impedance that is not matched by the coax and as a consequence standing waves develop along the cable. The impedance presented to the transmitter is then not 72 ohms but an impedance with resistive and reactive components. Gilbert emphasized that an Antenna Tuning Unit (ATU) is then required to transform the impedance to a pure resistance of 72 ohms to match the output impedance of the transmitter. To borrow the analyzer for a couple of weeks, contact Gilbert on 6254 3266.

Keep in mind that the line from the external power supply affects the readings of the analyzer. When making critical measurements, operate the analyzer from its internal batteries! The next General Meeting will be held at 8.00 pm, on Monday, 26 January 2004 at the Scout Hall, Longerenong St., Farrer.

VK2 News

Tim Mills VK2ZTM

Hello there. On behalf of the Council and the various workers may we wish you all the best for the coming festive season and for 2004.

With the upcoming holiday season please note that the Parramatta office will close at the end of business on Friday 19th December and reopen on Tuesday 13th January. The Federal office is closed from 23rd December until 27th January. This references the first exams to be conducted at Parramatta in 2004. These will be on Sunday 8th February with applications closing with the office on Tuesday 27th January 2004. The first Divisional Council meeting for 2004 will be on the 30th January. The first Trash and Treasure date is 23rd March. The 2004 AGM has been moved back a week to avoid Easter and will now be on 17th April. The Conferences of Clubs for 2004 are set down for 15th May and 27th November. The first Homebrew Tuesday evening for 2004 will be 3rd February.

The last full VK2WI news session for the year will be on Sunday 21st December when they go into a morning only format until mid January for 3 weeks. Both sessions should resume on 18th January. Clubs and groups with news for the holiday break, particularly by mail or FAX should submit it prior to the office closure. Those who use the Hunter Radio Group Monday evening news highlight service should note that they take a break from after 12th December until about 9th February 2004.

Now for the commercial. The ***VK2 Bookshop*** serves Australia and the range of books etc can be found on the VK2 Website. If you need to leave a hint for presents for the forthcoming festive season leave the computer running on the site. If this does no good and you have to go shopping yourself have a look for a bargain. Glancing across the shelves shows more than we can mention here. To refer to a few – there are WIA watches and key rings, as well as log books and the new call book. Do you like reading *QST*? This is available for a posted price below those at the newsagent. How about back copy articles from *Rad Com* or *QST*. These are available on CD,

usually by the year. Do you still have an interest in the Code? There are cassette tapes in various speeds. So the list goes on. There has been a change recently in the way the price is displayed. Now the purchase price is shown. For WIA members a discount applies, which varies depending upon the item. To give a discount on an interstate transaction the Bookshop needs to know if the purchaser is a WIA member. The following Divisions have made arrangements with the Bookshop to pass on their membership details. These are VK1, VK5 & VK8. If your Division has not yet made these arrangements, you will need to establish a reference with the Bookshop. To do this, post your latest AR address label to Bookshop, P. O. Box 9432, Harris Park. NSW, 2150. Do this prior to making a purchase, it will speed up proceedings when you decide what you want.

Two ACA meetings were held in NSW. The first was on Tuesday 14th October at Bankstown and the second on Wednesday 15th at Hornsby. The combined attendance for both meetings was 139. A few Amateurs attended both meetings. We hope you took the opportunity to make submission.

It is pleasing to see an increase in membership applications. There were 9 in October and 14 last month. The VK2 website has recently been updated with Divisional information and forms which can be down loaded.

All the best for the forthcoming holiday season and a happy 2004.

73, Tim VK2ZTM.

VK3 News

Jim Linton VK3PC
WIA Victoria web site: www.wiavic.org.au
email: wiavic@wiavic.org.au

End of year

On behalf of the WIA Victoria Council, may I wish all readers season's greetings. It has been a momentous year beginning with the Bogong bushfires and ending with the ACA's review of amateur regulation.

The responses to the fire emergency and to the ACA on its review by VK3 radio amateurs were outstanding, demonstrating once again the strength of amateur radio in Victoria.

It was also the year that Broadband over Power Lines (BPL) raised its head as a threat to the use of HF radio in Australia. The campaign against the technology continues.

The New Year will see an expansion of the 80m DX window. This achievement is a credit to the work done in 1999 by WIA Victoria member Peter Forbes VK3QI, with assistance from Barry Wilton VK3XV who worked through the WIA/ACA Liaison Committee.

The approach taken by Peter VK3QI was to conduct a survey of the nearly 200 licensees who held a total of about 1,500 fixed and mobile service licences in the band 3776-3800 kHz.

The survey found that the licensees either did not use their allocated frequencies, or if they did it was during daytime. This supported the WIA's argument that the DX window be expanded from its narrow 6kHz allocation.

Effectively the 6kHz band (3.795-3800) could only accommodate a single SSB contact in Australia. From 1 January, 2004, as a result of being expanded to create an almost 25kHz wide band, the VK 80m DX window will be able to support up to five SSB QSOs.

Peter VK3QI explains that every country with an amateur allocation on the top end of the 80m band has a different DX window.

The expansion of Australia's DX window increases the likelihood of contacts internationally, and is good news as propagation on lower bands is set to improve with the 11 year sunspot cycle now in decline.

The year 2004 will begin with both the DX window expansion and code-free access to HF bands both on New Year's Day. A cause for celebration.

Brenda says "thank you"

No sooner had Brenda Edmonds VK3KT recovered from injuries suffered in a road accident, than she accepted an invitation to join the WIA Publications Committee.

This team works behind the scenes in the production of the WIA journal, *Amateur Radio* magazine.

The main task she undertakes is proof-reading of each issue and

Brenda Edmonds VK3KT with the "Get Well" card signed by WIA Victoria members, and her magnificent Dendrobium speciosum orchid.

attending the committee's monthly review and planning meetings.

A little time later someone mentioned to Brenda that there was not an editor for the Callbook and this was delaying its production, and after due consideration she put her hand up for the job.

While forced to take things easy after the car accident, her absence from gatherings of radio amateurs was noticed, and those at the WIA Victoria AGM readily signed a get well card.

Brenda was surprised to receive the card, and expressed sincere thanks to her fellow radio amateurs for their thoughts and wishes.

Awarded WIA Life Membership at the WIA Federal Convention in Adelaide this year for her long years of service, Brenda continues to make a contribution to the affairs of the WIA although retired from elected positions.

A number of other things are also occupying her time, including further work on amateur licence harmonisation in the IARU Region 3 to be reported to the Region's meeting in Taiwan in February, and tending to her garden.

Summer holiday arrangements

The WIA Victoria office will have its last day for the year on Tuesday 16 December and reopen on Tuesday 3 February 2004.

Urgent mail and email will be periodically handled during this period. The closure also enables the preparation of annual corporate and statutory reports for the Annual General Meeting on Thursday 27 May 2004. Notices of Motion for the AGM close at 2.30 pm Friday 20 February 2004

The final VK3BWI Broadcast will be Sunday 7 December 2003. Broadcasts will recommence on Sunday 1 February 2004

ACA review

Thank you for those WIA Victoria members who had their say by sending a submission to the ACA Review of Amateur Service Regulation.

The ACA has a big task ahead of it in reviewing the nearly 1400 submissions. The word is that VK3 tops the table for having the most submissions.

Each submission not emailed is being converted into electronic form in preparation for displaying on the ACA website.

From those released publicly by their authors it is obvious a range of views and opinions exist on a number of the issues raised by the ACA in its discussion paper.

This is a very healthy situation and hopefully after being exposed to the different viewpoints, further changes in the thinking of individual radio amateurs, clubs and groups, will occur.

The WIA Victoria Council believed it was essential that it submit a comprehensive document to the ACA review, reflecting WIA policy, and "intelligence" gathered through the ACA's series of ten public meetings.

The WIA Victoria submission is available on its website. If you have not read it, please do so.

The first outcome of the review was the ACA's announcement on 17 November that Limited and Novice-Limited licensees will be able to operate on HF bands from 1 January, 2004. Please listen for, and welcome them to their new bands.

This decision is no real surprise due to it having overwhelming support in the review submissions and by the show of hands at ACA public meetings. It is a welcome change from the ACA's previous plan to hold off on the Morse code issue until early 2005.

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VK4 News

Qnews

By Alistair Elrick VK4MV

Gateway opener wanted!

We wonder if there is a person or club perhaps interested in setting up an HF APRS Gateway preferably on 30 m in or north of Rockhampton. There is one in Brisbane VK4DMI and one in the northern part of the state which due to skip etc would compliment each other very well. HF APRS at present is slow but growing and it is felt that two HF 30 m APRS gateways within the state would just about cover it very well, dependent on conditions. Brian VK4BBS recently undertook a trip from Brisbane to south of Nowra across to Goulburn and back the inland route whilst using the VK3 and VK4 30 m gateways and was tracked at least 95% of the way.

If you are interested you can contact Brian via packet or E-mail at bbeamish@bigpond.net.au or Des at vk4dmi@pacific.net.au

Busy by the Bayside

The Bayside District Amateur Radio Society Inc had a busy weekend recently. VK4WST Victor and VK4TY Tom were the mainstay of involvement with the Manly/Lota Scouts at Karingal Scouts Centre Mt Cotton.

VK4FG Cathy, VK4XR Eric and VK4TJE Eddie operated from Macleay Island.

On Sunday morning President Paddy hosted a breakfast for the Kilo Romeo CB Radio Club, they have been operating for 27 years! 5 Bayside Amateur Radio members are also members of Kilo Romeo.

Some changes in Cairns

The AGM for the Cairns Radio and Electronics club was held on 12 October. The outgoing committee was re-elected for another term. Glenn VK4DU attended and spoke to the club regarding WIA matters.

The Cairns 70 cm-Repeater has been revitalised with a new transmitter and a change of frequency. The frequency change was necessary to move away from interference problems. The new frequency is 434.850 (I hope this is in the hands of the Callbook people)

Also the Cairns IRLP node will be changing to a new ISP as the current Co-ordinator, Geoff VK4MTV is moving to Brisbane. It is hoped that the IRLP service will continue providing the excellent service it has provided over the past few years thanks to Geoff. Geoff is FNQ's loss but Brisbane's gain.

Good Luck Lyn!

Lyn Battle was in Townsville Thursday October 16th to do some Morse exams. We wish Lyn all the best for a positive result in the exams and hope that the trip all the way from Sweers Island in the Gulf of Carpentaria pays off! Now that's what I call keen!

Big bills for Qnews?

Recently Graham VK4BB was shocked to be informed, incorrectly as it turned out, that the QNEWS audio files on the net were costing some $165 per month from ISP host "PowerUp/Webcentral". Now after a lot of sleuthing, it has beendiscovered that was an annual figure, which the WIAQ had paid monthly for several months, now in credit to about the year 2005! Also the figure turned out to be for the QSL bureau not QNEWS.

Also seems the sleuthing has had another upside, some 1750 e-mails discovered on this site... what wasn't junk mail turned out to be council business. Dave Gulley says "strangely not 1 item of QSL business!" So if you think your input to Council has been ignored, there is the answer, just a full mailbox nobody was checking. Apologies to any Member affected by this oversight.

Home Hill Power Museum Switches 'ON'

North Queensland has turned the spotlight on its historic electricity and irrigation linkages, with Energy Minister Paul Lucas officially opening the new Home Hill Power Station Museum. This was part of the Home Hill Harvest Festival celebrations. The history of the Home Hill Power Station is fascinating, as it was built in 1922 to power the Inkerman Irrigation Scheme, which was the second State operated irrigation scheme. The power station brought electricity to the district before it arrived in Townsville, and played a crucial role in Home Hill's development. The original red brick power station building still stands, and is the most significant historical structure in the district, yet many people don't know it was ever a power station. By locating this museum in the main street, just down from the power station, it's now highly visible to the travelling public.

73s from Alistair

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For more than 15 years, I have been researching the basics of good nutrition, and, probably like you, I've seen all the vitamin fads and so on.

USANA is different ...very different The full range of products, including vitamins and minerals, have been developed and patented by in-house, nutritional research doctors.

We know that if the body is given the proper nutrients it needs, it can repair most of its own problems, often including life-threatening conditions such as cancers and cardio-vascular disease. Do you know anyone who has experienced these threats ?

These are serious pharmaceutical grade nutritional supplements, are not expensive, and represent real value.

Contact David Jones VK4OF on 0412 188 100 or via email davicjon@eon.net.au

Division News

VK7 News

Justin Giles-Clark, VK7TW

Sewing Circle BBQ – A Great Success

On Fathers' Day, 2nd November, the Sewing Circle BBQ was held at the QTH of Ken VK7DY and XYL Wendy at Orielton, about 30km NE of Hobart. It was a great success with many amateurs and families attending. The Sewing Circle Award was presented to Don, VK7AY.

This year a special award was presented in honour of Terry Wilson VK7HTW, who become a silent key earlier this year. It was decided that the award should be given to an amateur who has not only been a good operator but has contributed to the promotion and technical side of the hobby throughout the past year. Ian VK7ZIF donated and presented a home brew brass Morse key to Clayton VK7ZCR. Clayton has spent many hundreds of hours helping and promoting Amateur Radio.

The theme of "Looking Forward - Looking Back" Show and Tell saw many items on display, ranging from a 1kW dummy load to an ex-flying doctor radio, WLAN antenna, regenerative receiver restoration and a steam engine.

All in all there were lots of good eyeball QSOs with little QRM! Thanks to all involved. Just a reminder of the Sewing Circle Net is held at 17:00 (local Tasmanian time) each day on 3.59 MHz for a general rag-chew session.

Branch Meetings

South

At our Southern Branch November meeting we were fortunate to hear a talk by Professor Peter Dyson who is Head of the Department of Physics at La Trobe University. Peter's talk started with an illustrated explanation of the effects that solar flares and coronal mass ejections (CME) from the sun have on the earth's magnetic field and what this does to the ionosphere and the auroral ring.

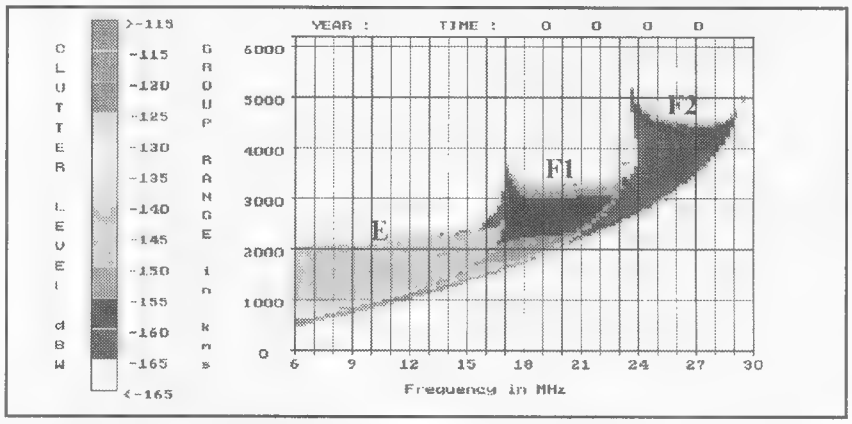
A sample backscatter sounding ionogram plotted group range in kilometres versus frequency (over the horizon radar).

The facility collects: group range, signal strength, Doppler spectral width and the angle of arrival of the return signal and from this information a range of maps can be created to investigate various properties of the ionosphere. Peter showed us many maps of various events and how the radar captures and represents these phenomena.

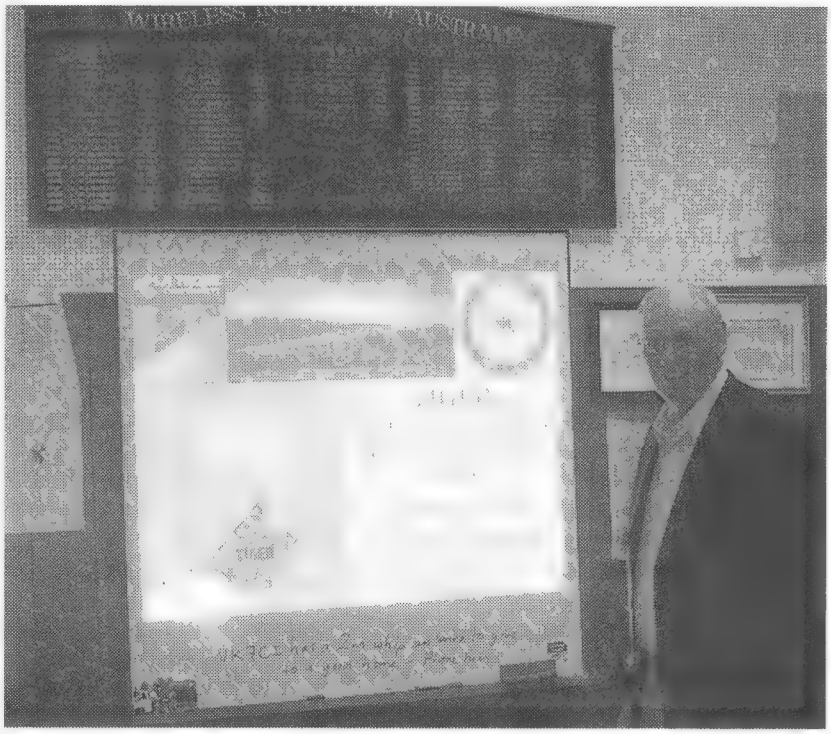
Thanks to Peter and his XYL Diane for coming along and giving this fascinating talk.

North

Just an update on the Northern Branch's meeting held in October. A record was set with 70 members and guests attending the night, and display by



Backscatter ionogram



Professor Peter Dyson

Gil Sones VK3AUI

Magnetic loop for two metre band

An interesting idea for a compact 2 metre band antenna appeared in the Antennas column of Arnie Coro CO2KK in the January 2003 edition of *CQ* magazine. The antenna was a small magnetic loop for the 2 metre band.

For use on two metres a magnetic loop has a maximum circumference of around 205 mm before it becomes longer than one tenth of a wavelength which is about the maximum size for a small magnetic loop. This results in a maximum diameter of about 65 mm. The loop is shown in Fig 6. The loop can be made out of 3mm diameter copper wire or 10 mm wide copper strip. The tuning capacitor can be one of the old beehive air trimmers (Philips) or a compression trimmer. The voltage rating will need to be quite high if more than a couple of watts is used. Also the RF current rating of the trimmer will need to be considered as loops are fairly demanding of the components used particularly if operated with more than a few watt of RF.

The antenna is matched by adjusting the tapping point of the coaxial feed cable inner on the loop. It is a miniature version of an HF magnetic loop antenna.

The antenna has a pattern with marked nulls.

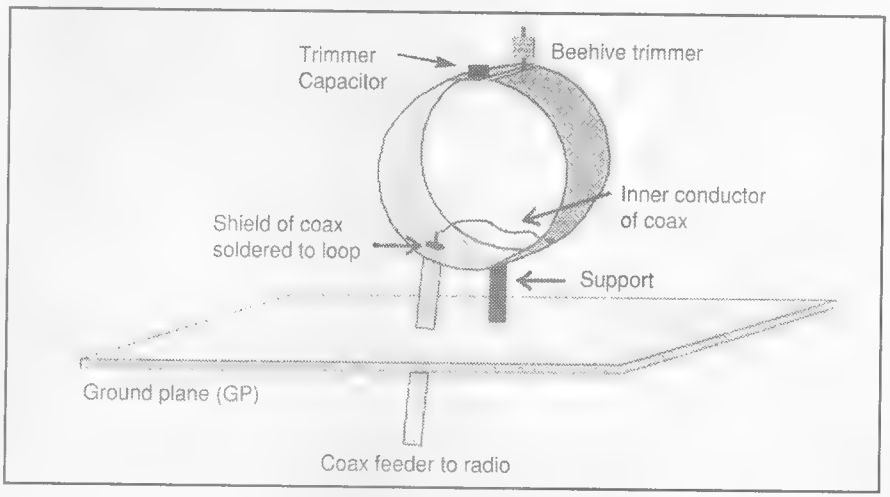


Fig 6. Two Metre Magnetic Loop.

Division News –

VK7 News *continued*

Strong Australia. Guests included Leon Senior and Ian Walker of Strong Australia and Brian Watson, technical director of Western Video. The evening culminated in a visual satellite display of the many facets of Digital and Satellite TV. The November meeting was a business meeting where the arrangements for 2004 were discussed.

North West

The Classic Challenge Car Rally was held on the first weekend in November and was very successful for those providing the communications despite the difficult location from a communications perspective. The technicians, Tony VK7AX and Mal VK7CA overcame all obstacles and with the field operators, did a great job.

The November meeting was a productive one with Tony VK7AX reporting that negotiations are progressing on a new location for the VK7RAE beacons. This new location is apparently as good as the old Kelcy Tiers site. The Joan Fudge memorial award was voted on and this will be presented at the end of year get-together.

Silent Key

S F ("Sugar Fox") Medford VK7SF

On Wednesday 8/10/03 the Tasmanian Division's Northwest branch lost one of its oldest and most respected members with the demise of Sydney Frances Medford VK7SF, or as we called him, just Sugar Fox.

We don't know for sure how long Syd had been licensed. Ken VK7KH reckons it must have been at least 50 years during which time Syd endeared himself to all amateurs lucky enough to have known him.

Syd was born in Cardiff, Wales in 1918, and came to the Burnie area at the age of 11 with his family. His working life was spent mainly in the automotive trade but he always had a fascination for electronics and, through an old teacher friend who was licensed, got his full call.

Syd was a brilliant drummer, one of the few who could read a drum score of a musical show. He was very much in demand until a few years ago when age caught up with him. He rarely missed a Northwest W.I.A. meeting, always ready with some commonsense comments.

We all will really miss dear old "Sugar Fox" walking in the meeting room door with VK7KH. Perhaps he's up there somewhere catching one of our skywaves. Enjoy your peaceful rest Syd.

Justin Giles-Clark, VK7TW

Club News

Adelaide Hills Amateur Radio Society

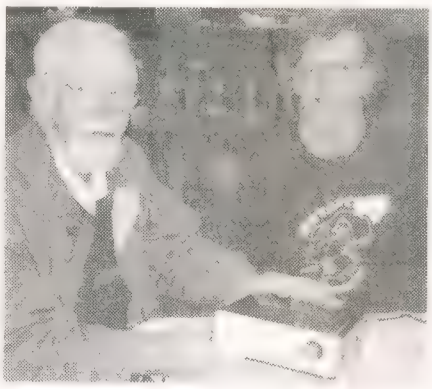
The October meeting was a very interesting "Show and Tell".

Darryl VK5JDS had made a frequency synthesiser that operated from 100kHz to 60MHz in 1Hz steps suitable for use as a signal source or as a variable VFO for a transmitter – with RIT facility included.

Rob VK5GR by using a somewhat modified tuning assembly from a Command receiver, had produced a 5 – 5.5 MHz tunable receiver, which included two Collins mechanical filters with relays and switchable crystals to cover all HF amateur bands

Jim VK5JST left his linear on the table at the back of the hall but was able to demonstrate how he had used dog food tins as covers and socket for valves, and the aluminium lids from Hoover washing machines to make the chassis and case for a very solid, very fine modified G2DAF type linear amplifier

Wally VK5TW had built a digital readout for his Yaesu 101 transceiver, from a design printed in the January 1978 edition of AR, written by Keith VK5OQ, which included a matrix of diodes for the frequency control. Once he found the modifications suggested in the March edition, the readout worked well and is still in use a number of years later. To his astonishment, Keith was to present an item later in the program, so they were able to compare notes.

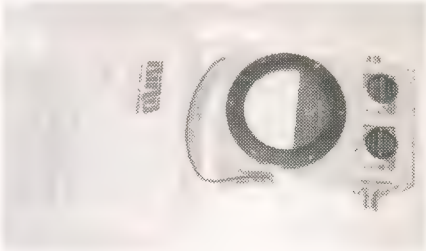


VK5TW, left, and VK5OQ

Lloyd VK5BR has had a number of queries about the comparative radiation from the cables and the antennas with which he experiments, so he had produced a sensitive RF meter which can be used to measure currents outside cables and around antennas.

Steve VK5AIM had three items for display. He had made up the antenna base recommended by "Practical Radio" magazine for use in field day situations which uses the weight of your car to hold the mast down. He had brought along an antenna tuner made from recycled parts which had won him a prize in a local show and he had the modified case he had made for a Bird Wattmeter.

Wishing to know about the extra plug-in unit available for the Bird, Steve had written to the company in the US and sent them a photo of the modified box he had made. In return he had received two extra plug-in units and a letter commending his workmanship in the box he had made. The meter and the letter were on display that night.



The last presenter was Keith VK5OQ who had made an electronic load for testing batteries and power supplies, made using 20 germanium PNP transistors, capable of dissipating 500 watts with constant current control.

Altogether a very interesting evening.

The South Australian Old Timers' Luncheon and Display

The Old Timers Network meets once a year for a luncheon in Adelaide. This year it was on 23rd October, at the Marion Hotel. At the last couple of lunches Vaughan Harvey, an announcer on the ABC for many years has brought along some items from his private museum.

This year he had two very early home made microphones, one made by the son of a handicapped operator VK5WS that could sit comfortably on his chest but still allow him to be heard.

Vaughan Harvey

Vaughan and his display, including the microphones and an early shortwave receiver are in the photo.

Whyalla ARC December 2003

JOTA is over for another 12 months I believe that we had one contact into Europe, several to New Zealand and many to the East Coast. Many thanks to the Group who set up radios for the Scouts at Weetera out of Moonta on Y.P. Your operators kept us busy on 2 metre

Our Club is busy with projects keeping all the gang busy. Making antennas that look like discones for the VHF Bands, they work too. The Club wishes Fred and Ted all the very best when they sit for their Novice on the 30th of Nov

We have started a Round Robin Group on 2 metre every night at 7.30pm at the present time on 146-800 MHz and as soon as our local repeater is back on air we will be on 146-700. All VKers are welcome to join in. We have already had contacts from all about, and as far as Adelaide.

The President of our club wishes to extend the Seasons Greeting to all and may your Xmas and New Year bring high expectations to us all.

Contest Calendar December 2003 – January 2004

Dec	5/7	ARRL 160 metre Contest	(CW)	
Dec	6/7	MDXA PSK31 DeathMatch	(PSK31)	
Dec	6/7	TARA RTTY Sprint		
Dec	13/14	ARRL 10 metre Contest	(CW/SSB)	
Dec	20	OK DX RTTY Contest		
Dec	20/21	International Naval Activity	(CW/SSB)	
Dec	26	Ross Hull Memorial VHF Contest	(CW/SSB/FM)	(Nov/Dec 03)
(to 18 January, 2004)				
Dec	27/28	Original QRP Contest	(CW)	
Dec	27/28	Stew Perry 160 metre Distance Challenge	(CW)	
Jan	3/4	ARRL RTTY Roundup		
Jan	10/11	Hunting LIONS in the Air	(SSB)	
Jan	17	070 Club PSKFest		
Jan	17/18	VHF+ Summer Field Day	(CW/SSB/FM)	
Jan	17/18	Hungarian DX Contest	(CW/SSB)	
Jan	17	LZ Open Contest	(CW)	
Jan	18	End Ross Hull Memorial VHF Contest		
Jan	24/25	CQ 160 metre Contest	(CW)	
Jan	24/25	REF Contest	(CW)	

Results CQ WW CW Contest 2002 (VKs only)

Single Operator High Power

VK5GN All Bands	907,392	
VK6LW	116,494	
VK5WU		62,186
VK2KM		55,476
VK4UC	28	251,368
VK4EMM	21	886,103
VK4XY	3.5	11,835
VK6VZ	1.8	2,666
VK2DPD	All	288,637
VK4UH	71,016	
VK2GR	70,231	
VK3DBQ	28,320	
VK4TT	28	151,368
VK2CZ	1,824	
VK4DX	14	477,432
VK2AR	42,372	

QRP All Bands

VK3JS	100

Correction

The following paragraphs are corrections to the details of the Ross Hull Memorial VHF-UHF Contest published in November 2003 AR.

Please particularly note the Contest final day is 18th January 2004 and Logs are required by 9th February 2004. ***Editor VK5UE***

The next Ross Hull Contest will be held between *December 26, 2003 and January 18, 2004.* The contest is open to all amateurs, and any mode can be used.

The target duration is three weeks. The actual length varies because of the fixed starting date of 26 December and a finish in the middle weekend of January. This causes the contest to become a day shorter each year. Last year it was down to 18 days, so this time it has been extended to 24 days. (It will drop back to 22 days for the 2004 - 2005 contest, because next year is a leap year.)

I have included a pro forma cover sheet and scoring table in my posting on the Internet, and it will make my job easier if you follow the layout of this sheet. You can send in your log by post or by e-mail. This year I will try out the option of sending out the results and certificates by e-mail. This will require Adobe Acrobat software to read PDF files, and a colour printer for the certificate. If you wish, you can still choose to have your certificate posted to you on nice parchment style paper.

John Martin (VK3KWA), contest manager

The Contest

The WIA maintains a perpetual trophy in honour of the late Ross A. Hull and his pioneering achievements in VHF and UHF operation. The name of each year's contest winner is engraved on the trophy, and other awards may be made in the various divisions of the contest. The contest is open to all amateurs.

Duration

0000 UTC Friday December 26, 2003 to 2400 UTC Sunday January 18, 2004. In Eastern Summer Time, that is 11 a.m. on December 26 to 11 a.m. on January 19.

Entries

Paper logs may be posted to the Manager, Ross Hull Contest, 3 Vernal Avenue, Mitcham, Vic 3132. Electronic logs can be e-mailed to jmartin@xcel.net.au. The following log formats are acceptable: ASCII text, Office 97 RTF, DOC, XLS or MDB. If you use Office 2000 or later, please save the files in Office 97 format.

Logs must be received by **Monday, February 9, 2004.** Early logs would be appreciated.

ALARA

Christine Taylor VK5CTY
vk5cty@vk5cty or geencee@picknowl.com.au

Classic Adelaide

If you are a VK5 amateur, OM or YL, the chances are you will be offering your services to the Classic Adelaide organisers as a communicator. To participate in an event like this in any way gives you an excuse to see some beautiful and rare motor cars, with some very happy people driving them. The lovely setting and the beautiful weather that is springtime in VK5 is much enjoyed by all the drivers and officials.

Isn't it great to have a hobby that helps others have a good time? Let us support our WICEN oragnisers, even if it is only for one of the days of the Classic.

Those of you in the other states can watch it on TV and feel envious of us.

Seasons Greetings

The committee of ALARA wishes all members and readers a Happy Christmas and New Year.

"May all your amateur radio wishes come true."

Let us all enjoy our marvelous country and let us all share some Christmas happiness with family and friends. Perhaps even share our Christmas table with someone who would be alone otherwise. That way we will enjoy it all more and so will our guest.

JOTA

Although I suspect there were other YLs involved with JOTA I have reports from only two. However, they are interesting in different ways.

Jeanne VK5JQ expected to be at Woodside, Scout headquarters camp for South Australia and home of scout station VK5BP, as she has been for the last three JOTAs, but at the last minute could not be there due to family commitments. Nevertheless she sent me some photos of the 1st Hillcrest Brownies and Guides.

Susan VK7LUV (our new President) had her very first experience of JOTA. In her own words:

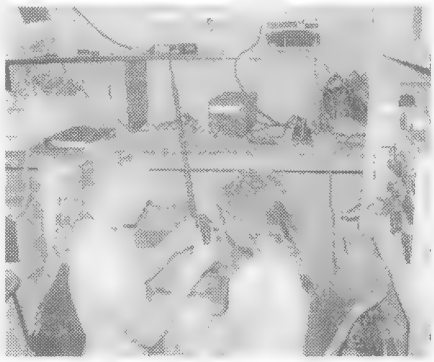
"We received a visit from one of our local scout leaders, who was absolutely desperate because all the ham operators who usually do JOTA for them were unavailable this year. Our scouts are in the Leven District, which comprises Ulverstone, 1/2 Ulverstone, Turners Beach, Motton Preston & Penguin.

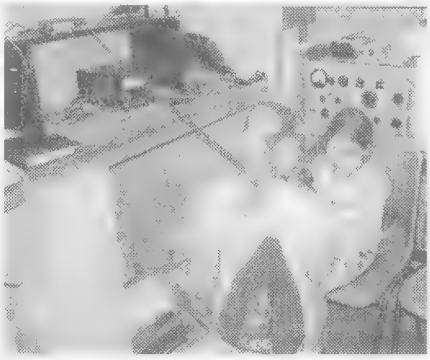
Alan and I have never been to JOTA before, though our son Jade went to JOTA camp in 2001. Everyone worries about the young people being mike-shy, so Alan and I were petrified of spending a whole weekend with this bunch of young people! Eventually, we decided to go out after lunch on the Saturday, and we stayed until everyone packed up on the Sunday afternoon. Our fearless scout leader (Nobby) climbed the tower to repair the 40m dipole, which was a job well done and there is no way you will get me up there!

I have no idea what normally goes into a JOTA logbook! We managed to contact VK1, VK2, VK3, VK4, eventually VK5, and our favourite was the 1st Fremantle Sea Scouts VK6. We heard several New Zealand stations, however they were quite busy so we didn't manage to contact them, but we were pretty busy with all the other stations we were able to work. All in all, our 25 scouts managed about 4 QSOs each, amid much laughter and only a small amount of shyness.

In order to obtain our willingness to attend JOTA, the scout leader offered us a bunkroom to sleep in, as we had all the children to take with us also. We did feel a little guilty going to bed in our nice warm (heated by log fire) bunk room. However when we surfaced in the morning to find several of the scouts had been 'rained out' and were trying to find somewhere to dry their gear, we were mighty pleased we weren't in tents ourselves!

Brownies: Danielle Aspinoll and Lauran Donaldson

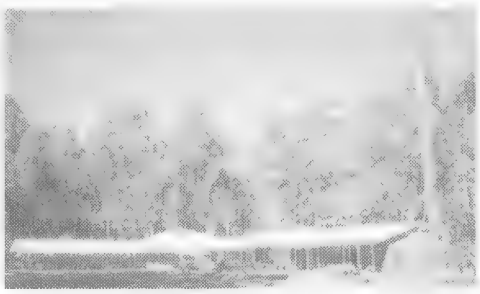




Guides: Kristy Aspinoll, Caroline Cousins and Page Heywood

The weather on Saturday was beautiful and warm (14 degrees) and the sky was quite clear when we headed off to bed (at 2am Sunday, I might add), however it rained quite heavily while we slumbered and then it drizzled most of Sunday morning.

I am attaching a photo of Paton Park, which was the site of this educational weekend - it is the main camp for the Leven District scouts. "



Paton Park

The Central Coast hosts the Southern Hemisphere's largest Hobby Radio and Communications Expo

On Sunday 29th February 2004 the Central Coast is host to the largest gathering of Radio Amateurs, Radio Communications Enthusiasts, Computer and Electronic Hobbyists in the Southern Hemisphere. More than 2000 people from 40 clubs and organisation from all over Australia and the Pacific will converge on Wyong Racecourse to display and trade the latest radio communications equipment. Exhibits and operating displays will show and demonstrate:

- All facets of Amateur Radio
- CB Radio
- Shortwave Listening and Scanning
- Packet Radio - Computerised Communications
- Television and Multimedia transmission and reception demonstrations
- Interesting technical lectures, seminars and workshops
- Electronic construction
- Exhibits of Vintage and Historical Radio collecting and restoration
- Volunteer Emergency Communications
- Satellite Reception
- Hobby computing
- Internet communications
- Radio Fox Hunting

Truckloads of pre-loved equipment at give away prices in the flea market and disposals areas.

- See all major Radio and electronics equipment suppliers together under one roof with many dealers showing the latest offerings and great bargains.

Throughout the day there will be several seminar sessions and workshops on topical subjects, with presentations from experts and equipment suppliers, including talks on the latest technology.

Plenty of off street parking is available within Wyong Racecourse grounds. Tea, coffee and biscuits will be available from 8.30 am to 3.00 p.m. at no charge in the Dining Room. Hot and cold food can also be purchased within Wyong Racecourse.

Anyone with an interest in radio communications or electronics can contact the event organisers, The Central Coast Amateur Radio Club, by phoning 02 43402500 for more

Gates to the Racecourse will be open to the public from 8.30am Entrance fee: Adults $10.00, Seniors Card, pensioner concession, students $5.00, Children under 12 free.

Silent Key

Ian James David Dalrymple VK2XU

Ian was born on 31 March 1926 in Castlemaine, Victoria to parents Emily (nee Fenton) and Len. He lived a full life, devoted to his family, a man who was a great provider. He had a love for life enjoying playing cricket in his younger days and in latter years watching rally cars, cricket and golf. He has been a member of the Probus Club, Golf Club, Oxley Region Amateur Radio Club (ORARC) and the Wireless Institute of Australia.

Most of his working life Ian spent working for the PMG, which in later life took him to the top of Middle Brother Mountain as OIC of the Radio and Television Relay Station, a position he enjoyed until his retirement. The family moved around having spent time in Melbourne, Orange, and Darwin and in 1964 to Port Macquarie where they spent many happy years.

Ian, as a member of the ORARC, was a member of the Repeater group for many years and was a source of technical knowledge to be reckoned with. He was in the forefront in assisting with the communications for the original Southern Cross Car Rally, which was run in the forests about Port Macquarie. He is known to have assisted many of our local Hams and Scouts with technical advice and, as DX Engineering, was the local Kenwood agent.

Although he enjoyed the local VHF activity Ian's favourite band must have been 20 metre, for this is where he kept in contact with his overseas friends. He was also a keen photographer and video enthusiast.

Ian had not enjoyed good health over the last 12 months and departed this life on 25 September 2003. He was predeceased by his wife, Betty in 1995 and is survived by children, Susan (Sue), Jane, Robert, brother Leonard, sister Marjorie and grandchildren Aron, Jessica, Libby, Lily and friend Miriam.

Vale Ian VK2XU

Submitted by Bill Sinclair VK2ZCV

ALARA *continued*

Luncheons

In Adelaide there will be ALARA Luncheons each month, on the second Friday, meeting at Berties Pancake Parlour at 12 o'clock.

In Melbourne there will be ALARA Luncheons on the odd months meeting at the Travellers Aid rooms in Swanson Street

In Perth there will be ALARA Luncheons on the third Friday of each month at the Hyde Park Hotel

In Adelaide in October we had a new face, Jana, not yet a member, but a welcome addition to the group. We were also visited before lunch by Cecily, XYL of Gary VK5ZK, who especially came by at that time to say "Hello".

Ham Shack Computers

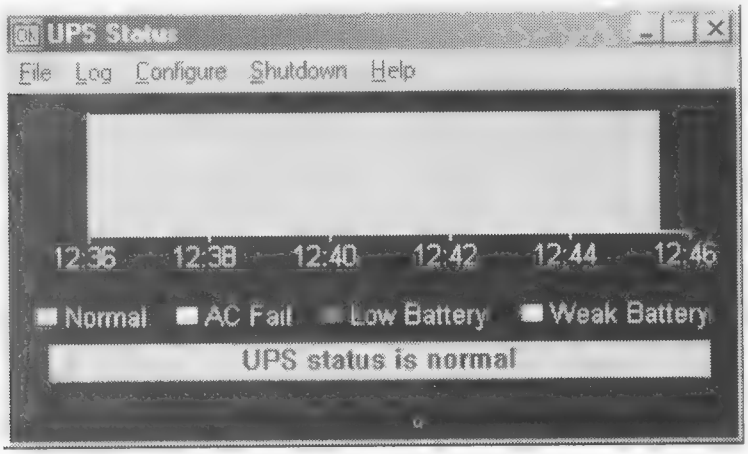
Alan Gibbs VK6PG
223 Crimea Street, NORANDA WA 6062
Email: vk6pg@tpg.com.au

Part 32 –

Power BackUPS

We all take for granted the reliability of power supplied from local electricity authorities. In the 70's, Western Australia was standardised on 254-volts AC and 240-volt electric globes would pop off regularly. Just imagine what damage was done to imported AR equipment designed for 220-volts AC! Today, thankfully, the reliability has much improved and is standardised on 240-volts. However, for readers living in the Australian outback, reliability can still be volatile – especially where the community is supplied from mine-site power generation. Enter computers! Now what happens when the power supply is plagued with glitches, variations and/or cut off?

The answer is an UPS or Uninterrupted Power Supply.



UPS Options

Most computer users are always worried about damage to hardware and software in an attempt to preserve their effort in file creation and keeping systems operational. Just one power glitch when in the middle of writing an article for this magazine, can set the writer back by many hours. However, if the glitch causes the hard drive to crash, this is a major disaster and maybe days of effort just to get back to square one! Serious users take precautions to back up files in an attempt to protect their data and valuable time and effort. Even if the backup process is efficient, and a dreaded glitch strikes, anything can happen – unless users find a solution to prevent the glitch in the first place. There are options to avoid glitches:

1. Run a laptop computer from a float-charged battery power supply – commonly done by contesters to protect electronic log keeping. Essential during field days when the AR equipment is being run from diesel/petrol generators etc.
2. Use questionable so called "spike guards/quenchers" sold through emporiums. These are useless if the supply is suddenly cut off!
3. Spend extra money and install a proper Un-interruptable Power Supply or "UPS" for short.

What's an UPS?

Mains powered computers use switch mode power supplies to generate the key computer supply potentials for the motherboard and peripherals. A nasty power surge can not only blow up the power supply in the computer, but also destroy most other parts of your machine in a fraction of a second. Sadly fuses are not an option these days because they are much too slow to offer protection. Have you noticed the lack of fuses on your computer!

If the supply input can be accurately maintained at 240-volts under adverse conditions, then the reliability of the computer can be maintained along with your valuable data. To achieve this an UPS device is connected between the household general-purpose outlet (GPO) and the computer. The UPS device consists of these parts:

1. A "through" condition where the mains is passed through the device to the input of a computer. However, the UPS condition is monitored by software and operational data is recorded.
2. Power fail or surge condition when the UPS fast switches to "isolate" condition and runs an internal switch-mode power source to keep the computer active (safely). This is done with an internal, sealed lead acid 12-v battery. Again, software records the interruption warning the user that the computer will automatically shut down in (say) 120 seconds. Imagine that you were writing this article in MS Word with MS XP and a severe 20-second power break was to occur. The above image would indicate an AC fail, the software emits a loud "beep", the duration is logged and a warning message appears on the screen that the computer will shut down in (say) 2 minutes. This gives you plenty of time to save the document and gracefully exit XP and shut down the computer. All this is done whilst the UPS has switched to battery power keeping everything running within the capacity of the battery.

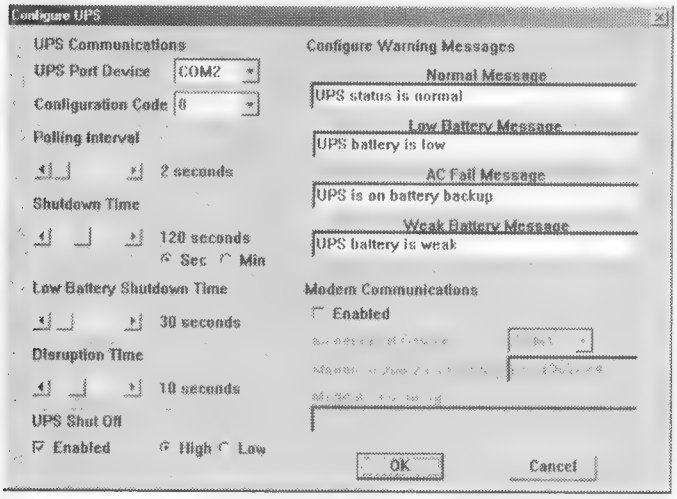
Applications where an UPS is

essential include mission critical operations like packet radio bulletin boards, nodes, HF forwarding links, Internet servers and storage systems, firewalls, spam filtering and e-mail servers. Even Amateur Radio operators use the UPS to maintain data, keep PSK and other data modes alive. It's far cheaper to use an UPS than to rebuild your computer system after a lightning strike and power blackout! The cost of purchasing an UPS varies between $200-$500 depending upon the desired UPS capacity defined in VA for one or more computers. It all depends upon the depth of your pocket.

Software

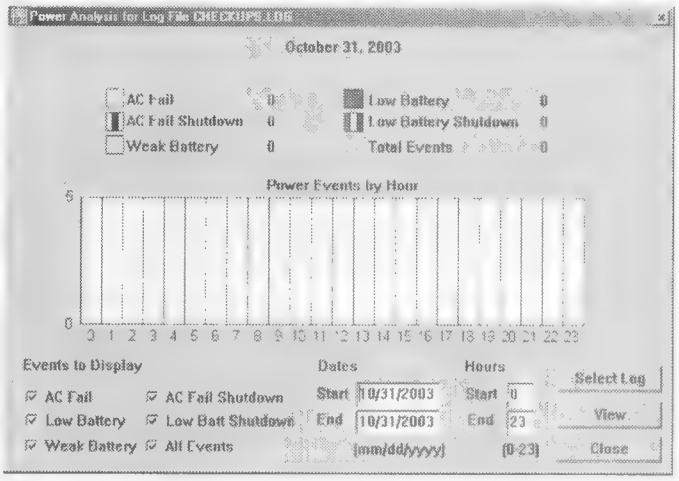
There are many types of software available on the Internet. Some are complex and limited to specific operating systems. Others are "generic" and simple to configure and use. Whatever the system chosen by the reader, all that's needed is a spare communications port (serial or USB) and configuration code from the UPS handbook. The image opposite shows a generic UPS software package where the timing, on-screen messages, polling etc can be configured easily.

More complex packages allow remote modem access (PowerChute from APC. 2) to control the system. These are used by BBS's, repeater and node links where the hardware is installed in remote locations and distant from sysops and other controlling AR operators. The majority of readers will stick with the generic UPS applications and accept both the protection and the ability to control computer operations locally from the shack.



Power Logging Data

In the above image, power logging information is stored ready for analysis and statistical information. Information is stored in an UPS logging file with data on time, date, months, year, type of failure and how long each failure was logged. Useful information if your location is power volatile and you intend to take up issue with your power supplier! This may sound far-fetched, but readers working from remote locations such as mining towns and the like would take this very seriously indeed. Other generic software options include a calender by month review, and the ability to select data statistically that can be inserted into reports and AR logs. Very sensible in a pro-active, modern computerised Ham Shack.



UPS Batteries

These resemble small lead acid, fully sealed "motor cycle style" batteries. They vary in capacity, the most common being 12-volt at 7 A/H (DSE-S3321, Jaycar SB-2486 or Altronics S5090). These make ideal general-purpose batteries, are easy to charge, not plagued with problems like the Nickel Cadmium rechargeable – and they last for years and years. They are commonly used by QRPers and portable stations because they have a high capacity and are comparatively light to carry around. Ideal for UPS applications, and in some cases can be "hot-swapped" maintaining the operational needs of your computer service. In cheaper UPS, unfortunately the UPS must be disconnected and the case removed when the battery needs replacing. On a single computer, they can last up to five years which is very cost effective in protecting your valuable computer data and hardware.

Summary

If you value your computer, data and applications, a sensible addition to your computer protection arsenal is an UPS. They cost around $250 but are well worth the investment – especially in locations where the power supply regularly hiccups!

Ham Tip No. 32

Regularly test your UPS capacity by simulating a power failure. Your computer should run for at least two minutes before the UPS battery starts sagging. More than enough time for you to close down gracefully!

Ham Shack Computers - Part 33

Next month – discusses "The Ultimate QRP Project" for Radio Amateurs.

(1) Ham Shack Computers Web: www2.tpg.com.au/users/vk6pg

(2) American Power Conversion (APC): www.apc.com

73s de Alan VK6PG

ar

Technical Abstracts

Gil Sones VK3AUI

T5

In *QST* January 2003 Steve Johnson WD8DAS described the Two Tube Tuna Tin Transmitter, T5. The transmitter is a simple two tube design using a 5763 Power Amp driven by a 6C4 crystal oscillator. The tuna tin was used as the chassis. The tuna tin used was a larger size, 12 ounces, than that used for the original tuna tin solid state transmitter described by Doug De Maw W1CER in QST in 1976.

The design uses a 5763 power amplifier driven by a 6C4 crystal oscillator stage and is shown in Fig 7. The circuit can be used on 40 or 80 metre. An older FT243 style crystal was used.

For tune up a pilot lamp is used as a visual indicator of the power amplifier plate current. The pilot lamp used was a #49 panel lamp mounted in a rubber grommet. This is a 2 volt 60 mA lamp and any locally available lamp with a similar current rating would be suitable. Be careful with the mounting as the full 250 volt plate voltage is on the metal parts of the lamp. Using a lamp holder could present a hazard as the metal parts of the lamp would be accessible and could be at the full 250 volt anode potential if the bezel were removed in order to change the lamp. Soldering the lamp into circuit and observing it through a grommet helps by keeping the danger within the chassis.

The plate tuning capacitor C10 is a 200 pF air variable. The loading capacitor C11 is a 750 pF mica compression trimmer. The plate tank coil L1 is 32 turns of 20 gauge wire 2 inch long and 1 inch diameter. A B&W miniductor type 3015 would be suitable if available. The capacitors used in the transmitter should be high voltage types suitable for valve circuits. They should have a working voltage well above the plate voltage used.

For safety the circuit should be operated with an additional RF Choke connected across the loading capacitor C11. This should have a substantial current rating as it will need to blow the High Tension fuse in the plate supply in the event that C9 fails. The pilot lamp monitoring plate current of the 5763 will probably blow first if the safety RFC is in place but make sure that the RFC is capable of blowing the HT fuse.

Wiring should be insulated and all wiring and components at a high voltage potential should be within the chassis.

Also for your safety you should be aware that a high voltage appears across the key contacts. You should take care to prevent contact with the key contact. This was a well known hazard but is not a common hazard today with low voltage rigs. Be careful.

With regard to safety you should always switch off the rig before working on it and earth the plate supply line so as make sure the circuit is safe to work on. Also when working on valve circuits you should work with one hand in your pocket to help prevent inadvertent contact with high voltages and electric shock. Remember that we are all used to low voltage rigs and circuits and high voltages should be treated with considerable respect.

In the *QST* article a suitable power supply was described which used back to back transformers to produce a suitable plate supply voltage. However due to the differences in the AC supply systems it is not directly applicable locally and the circuit has not been reproduced.

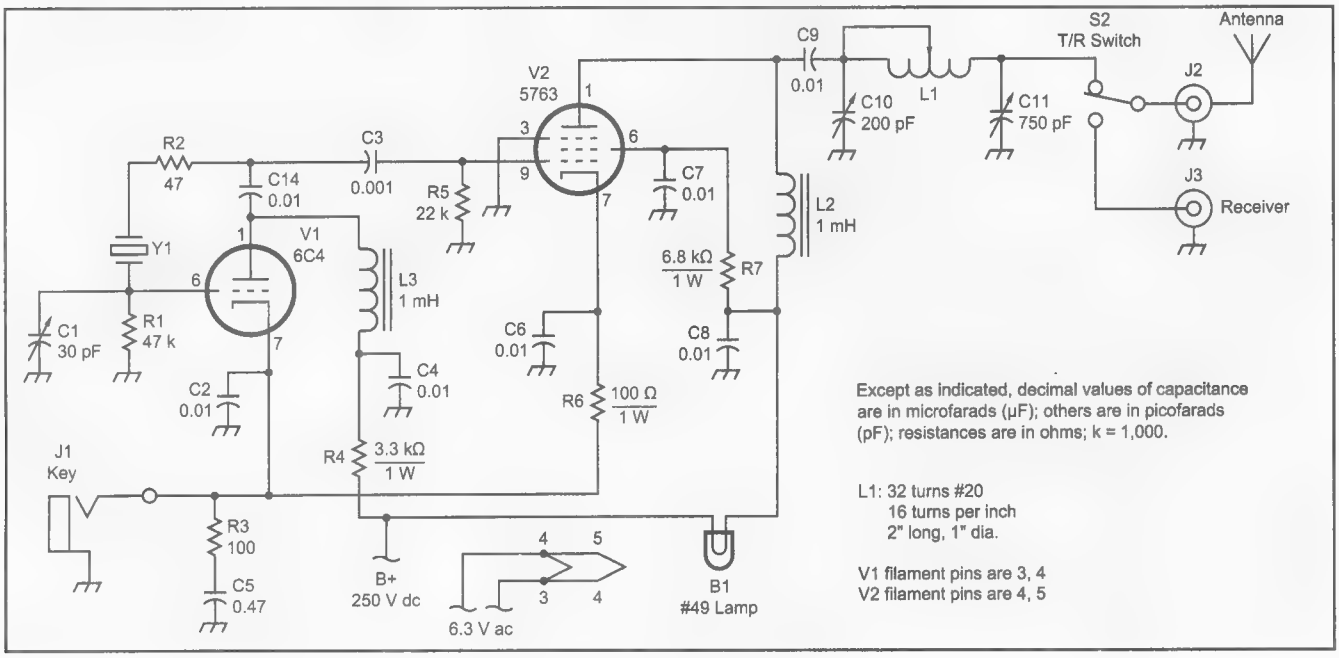


Fig 7. T5 Transmitter Circuit.

Robin L Harwood VK7RH

2003 was a bit shaky. What will 2004 bring?

It is truly amazing that another year has come to a close. Quite a lot has happened over the past 12 months with a war within Iraq, the Coalition Forces occupying it and followed by a bloody guerrilla campaign from a combination of diehard loyalists of the former regime, probably assisted by external terrorist groups such as "Al Qaeda". The situation between the Israelis and the Palestinians rapidly went downhill with the so-called "roadmap" in ruins following repeated suicide attacks from terrorists with the inevitable tit-for-tat response from the Israelis.

As well there is still tension on the Korean Peninsula with the United States backing its South Korean Allies after the North Korean regime admitted that they had acquired nuclear weapons through reprocessing spent plutonium rods, in violation of an agreement between the two. It currently remains a stalemate with no sign of either party backing down.

In the middle of the year, Australia led a multinational force in to the Solomon Islands after law and order completely broke down in this small Pacific Island nation. Troops and Police quickly restored order without any bloodshed to the extent that the intervention force has been scaled down much earlier than anticipated.

These three conflict zones still feature prominently over shortwave radio. It was also apparent this year that shortwave is rapidly being abandoned by the players, both big and small. I reported recently that the Norwegians are terminating their external HF relays on December 31st. This caused problems for the Danes who were leasing time over the senders. It now seems likely that they too will abandon HF on the same date.

The small Costa Rican station "Radio for Peace International", which was based at the United Nations University of Peace campus, was told to vacate their buildings on the campus. Mediation talks broke down in early November and things got very nasty. This station may have already disappeared by the time this gets into print.

The Voice of America in Washington DC surprisingly axed broadcasts in English to Australasia when they ceased English programming between 0700 and 1200. 9645 and 6165 used to provide excellent signals into this region, with 9760 and 11715 but not as good. Programming does indeed resume at 1200 to southern and eastern Asia. Also the morning release formerly on 17735/740 at 2000 has also gone. 9670 from Thailand does come in at 2100 but this is primarily for SE Asia.

Radio New Zealand International resumed broadcasts via shortwave in mid October, following their unexpected silence after the sender and antennas were zapped by a lightning bolt. RNZI is now running 24/7.

In early November, I received my copy of the 2004 edition of Passport to World Band Radio, edited and published as usual by Larry Magne. It is a 592 page book with the usual receiver reviews plus tips on how to find the various world band broadcasters, by time or by country. There is a review of the situation in Burma or as it is currently referred to - Myanmar, from the perspective of HF broadcasts to the nation. Very few broadcasts emanate from this nation which has been isolated from the international community. The familiar blue pages are at the rear, containing frequency occupancy charts and I find these very useful, but far from being infallible. It costs $22.95 US plus $9.95 postage direct from the publisher which was approximately $40 AUD. This is less than 2002 because the exchange rate has risen over the past 12 months.

I wonder what 2004 will bring? DRM commenced in June but the number of DRM broadcasts has actually decreased. It does depend on how many DRM receivers are manufactured and what the consumer demand will be. IBOC, the American equivalent, also got off to a shaky start. At present there are even fewer IBOC receivers than DRM . IBOC on the AM band seems to be doomed but perhaps would work on FM. The European DAB concept is picking up, especially in the UK. Australia is presently conducting trials in Melbourne and Sydney just above 200 MHz to ascertain if it would work under Australian conditions. No IBOC trials have been organized so far for here. One interesting trend for broadcasters using DRM via HF is for pooling resources. The Canadian senders in Sackville NB are relaying programming blocks on one frequency, minimizing congestion and interference from multiple senders. This trend looks likely to continue.

Well that is all for 2003 and may I extend my best wishes for the Season and look forward to 2004.

Robin L.Harwood VK7RH.

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Try this: Your computer as a sound recorder

Peter Parker VK3YE
12/8 Walnut St, Carnegie, 3163
Email: parkerp@alphalink.com.au Web: http://www.alphalink.com.au/~parkerp

If you want to test how far you can wander with your handheld transceiver and still be within simplex range of home, what do you do?

You could co-opt a bored family member to listen at home and take notes of where they can hear you. Or you could hook your set up to a tape recorder. Then you'd have mostly silence, punctuated with the occasional test transmission. A VOX tape recorder would help but has disadvantages of its own.

The widespread use of computers in the shack and a simple freeware program means there is now a better way. By feeding audio into the sound card, and using the *Scanner Recorder* program, you can now do monitoring and recording on the computer. And it's not confined to FM handheld range tests either. When you need to monitor a VHF DX calling channel while you're out, record a few grabs of audio on an obscure frequency, or hope to record a broadcast or net, *Scanner Recorder* has numerous uses around the shack. Clubs will also appreciate it for monitoring usage of their packet BBS or repeater. With an in-built activity time, it will come in handy when assessing likely transmitter duty cycles and power supply needs.

Scanner Recorder can be downloaded from the Shareware Music Machine website at http://www.hitsquad.com/smm/ . This site has numerous other programs, but the Scanner Recorder appealed most due to its VOX function and simple operation. All it does is convert incoming audio into a .wav file. This can be played on the Windows Media Player that comes standard on most computers.

Accustomed to multi-megabyte software, *Scanner Recorder* was a pleasant change, comprising a .zip file just 129k long. Even with a slow connection it's no more than a few minutes to download. If you want to get *Scanner Recorder* direct, without looking at all the other programs, just visit http://www.hitsquad.com/smm/programs/ScannerRecorder/ Before use, you need to unzip it. This can be done by right-clicking on the file at the location you saved it in Windows Explorer.

To start *Scanner Recorder*, first create a new file to do your recording on (by selecting File, then Open). Then set the squelch back from the point where the recording starts with no incoming signal. Once you've sorted these out, you will find *Scanner Recorder* an easy to use and worthwhile addition to the shack. And the price is right, too!

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Mode: TX: FM RX AM/FM
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Voltage: 13 8 VDC
Weight 1 2 Kg
IC-910H Amateur VHF/UHF Transceiver
Freq: 144-148 / 430-440 MHz 1240-1300MHz
Mode: FM/FM-N/SSB/CW
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WRTC 2006

The next World Radiosport Team Championship (WRTC) will be held in 2006 in Brazil. That announcement came October 11 from the World Radiosport Team Championship Sanctioning Committee, the Liga de Amadores de Radio Emissão (LABRE) http://www.labre.org/ and the Araucaria DX Group (GADX) http://www.inepar.com.br/araucaria/radio.htm. Steve Morris, K7LXC, chairs the WRTC Sanctioning Committee.

Last held in Finland in July 2002, the WRTC is a competition among two-person teams drawn from among the world's top Amateur Radio contest operators. This event brings competitors together in a single geographical area. It determines the best of the best!

The on-the-air portion of the event is held in conjunction with the International Amateur Radio Union (IARU) HF World Championship http://www.arrl.org/contests/announcements/rules-iaru.html, although WRTC rules differ in some respects from those of the IARU event, and scoring is done separately.

WRTC stations run 100 W and have comparably modest antenna systems—typically a dipole for the low bands and a triband Yagi for the higher bands. The idea is to minimize the variables associated with radio contesting, thereby emphasizing each team's operating skills.

In 1996 your column writer, together with Martin, VK5GN (now VK7GN) had the privilege to represent Australia when the event was held in San Francisco and be assured, it is an event that remains in your memory for ever. Hopefully a two-person team from Australia will be represented at WRTC-2006. Volunteers needed.

(ARRL N/L)

Power line communication

As you are aware from previous readings in "AR", there is considerable concern about power authorities using power lines for communication purposes using frequencies between 2 and 80 MHz. NZART reported that a PLC trial has been held in Karaka Street, Takapuna, ZL, in June. Reports are that it had "mixed results". The problem found is that the HF modulation will not pass through the pole-mounted step-down transformers but it worked fine on the low voltage side.

Tests over the 400V and 1100V lines gave the same problem. It is understood that development work is being done on a "bypass" to allow PLC data to get around the pole transformers and to use PLC over the high voltage network.

No information has been obtained on whether or not the tests considered the level of HF radiation from the lines.

Broadcasters themselves also have exhibited increased concern about the potential of PLT/BPL to prevent their signals from reaching listeners. The Research and Development branch of the highly regarded British Broadcasting Corporation (BBC) has released a White Paper reporting on a brief trial in Scotland. The two competing PLT/BPL systems in operation in the town of Crieff both interfered with HF reception. Tests were conducted at four locations. The BBC engineers described the interference as varying between "'annoying' and a level sufficient to make the broadcast completely unintelligible."

According to ARRL N/L 22/42, Manassus, Virginia, is about to use power lines for high speed internet service. One wonders how they will succeed with their step up/down power transformers. The ARRL and FCC will be monitoring the outcome very closely.

(NZART)

Pirating in the UK

In England, new powers of arrest were introduced on 18th September in an attempt to combat pirate radio stations. The police, working with the Radiocommunications Agency investigators, will now be able to arrest a pirate broadcaster or anybody suspected of supporting or facilitating illegal broadcasting. UK Communications Minister Stephen Timms said: "These new powers will be an important weapon in the campaign against pirate broadcasters. By interfering with communications services which are vital for public safety, pirates can put lives at risk". Pirates detained under these new powers could face an unlimited fine or up to two years in prison. For other transmitting offences such as unlicensed use of business, marine, or amateur radio the maximum penalty is a £5000 sterling fine and/or 6 months in prison plus forfeiture.

(rsgb)

Morse Code

While we have been swamped with the hype to remove Morse requirement from existing and future licences, it was interesting to read in the ARRL Newsletter that the FCC has put out petitions, known as round 2, for comment by Nov 7. One proposal is to retain 5 wpm for General/Extra Class licences. Describing CW as "the purest, most accurate, efficient, reliable and economical form of radio communications ever devised," Frank Napurano, K2OKA, requests that the FCC retain the 5 WPM Morse requirement "in the interest of public safety, the preservation of a radio art and as a tribute of support for a prized and respected avocation."

World Radio Amateur Callbook

The call book now includes email information. If you would like your email information added to your call entry, please email Thomas Gudehus, DB3ZX at kamper@wichte.de or visit www.callbook.com

AMSAT

Bill Magnusson VK3JT

Increased availability of SO-50 satellite

A recent report from Noel VK3FGN indicates that SO-50 is available on some 95% of daylight passes over Australia. Matt VK2DAG, Noel VK3FGN and Trevor VK3TI are all acting as SO-50 activators. That means that virtually whenever it is over Australia SO-50 will be turned on and stations can use it. Noel said that only a few stations are using SO-50 regularly and it would be nice to see some more activity. Full details of frequencies, modes etc. are available on the AMSAT web site and in my half-yearly updates in July and January but here is a shortened version.

SO-50

Uplink: 145.850 MHz

Downlink: 436.795 MHz

Mode-J FM amateur repeater, using a 67.0 hertz tone on the uplink, for activation. SO-50 keps are available from the usual sources, either on packet radio BBS or AMSAT News Service on the Internet, or direct from www.celestrak.com on the world-wide-web.

More on AO-40 FEC telemetry

Stacey Mills, W4SM has posted this latest update regarding FEC telemetry on AO-40.

"We are running FEC on as many orbits as possible, working around the need for pictures and other command functions. FEC mode requires loading the IHU-2 each orbit and this is not always possible; however most orbits have FEC active. We have modified the FEC routine to allow the option of cycling between normal mode telemetry including message blocks and event blocks, and FEC mode telemetry (A-blocks only). With this option, the normal mode is currently active from 0 to 16 minutes of the hour, and the FEC mode is active for the remainder of the hour. This allows time for users to read the message blocks and for event blocks to be collected. During transition between these two modes, up to 1 minute of beacon "idling" (hex50) may be heard before the new mode starts". If you are intending to operate on AO-40 it would be advisable to get late breaking news from some electronic source such as packet radio or the Internet as things can change almost from day to day, especially during the current eclipse season.

Some hints for operating with AO-7

Since this satellite unexpectedly returned to service after many years of silence there has been an interest in exploring the possibilities it offers.

From time to time I'm asked for advice on how to have the best chance of using AO-7 successfully. It's not easy and many newcomers who were not around when this kind of satellite was the only kind available may be expecting too much. But - it is possible to have very successful contacts via AO-7 and it's fascinating to think of your signals coursing around through all those now almost ancient circuits on board this remarkable spacecraft. AO-7's main claim to fame was and still is its relatively high orbit. When it was newly launched I can recall making contacts from southern Victoria into New Guinea. VK6 to ZL was commonplace. AO-7 orbits high enough that all of Australia, New Guinea, New Zealand and some of Antarctica can be in its footprint at once. Contacts within VK would routinely last for 20 minutes or more. In the past few months there have been a number of responses to similar questions on the AMSAT-NA bulletin board. I have attempted to summarise this advice. Before you begin it's well to remember that AO-7's batteries went dead a long time ago and it runs on solar power only. Don't bother to listen for it at night. It must be in sunlight to switch on - and - it can switch on in either mode-A or mode-B. Begin by listening for the beacon on 145.970 MHz. This will be subject to Doppler shift and will appear a kHz or two higher when you first hear it and will drift slowly down in frequency a few kHz during each pass. If you don't hear the beacon on 2 metres the satellite may be in mode-A and you should hear the beacon on the 10 metre band around 29.5 MHz.

1. Tune your receiver to 145.945 MHz (if you can hear the 2 metre beacon) and your transmitter to 432.148 MHz and select CW mode. If mode-A is on tune your receiver to 29.450 MHz and transmit on 145.9 MHz
2. Wait for Oscar 7 to rise a few degrees above the horizon. If you have a tracking antenna you should hear it immediately of course but many newcomers will be using omni-directional antennas and noise can be a problem on the 10 metre downlink.
3. Start sending very short bursts of CW dits. A keyer is ideal for this but keep the strings down to just a few dits at a time.
4. Leave the transmit frequency alone for now and slowly tune your receiver up and down just a few kHz to search in either direction until you hear your short strings of CW dits returned from AO-7.
5. You can then call on CW if you wish or switch to SSB and try for a phone contact.

There is a lot of debate on whether you should tune your transmitter or receiver to compensate for Doppler shift.

The weight of opinion seems to come down on the side of tuning your transmitter and leaving your receiver alone as much as possible. This helps to avoid contacts drifting into each other's passband but it's not infallible. Full computer control of both frequencies is the only total way out of this problem. But don't let that spoil your enjoyment of AO-7. Follow the above rules and you should be able to have successful contacts on this amazing satellite - and when you do - spare a thought for all those old circuits on board AO-7 that are passing your signals through. The above may sound complicated and somewhat daunting to a newcomer but there's no easy way. You just have to get in there and grapple with it all. Practice makes perfect.

The AMSAT group in Australia

The National Co-ordinator of AMSAT-VK is Graham Ratcliff VK5AGR. No formal application is necessary for membership and no membership fees apply. Graham maintains an e-mail mailing list for breaking news and such things as software releases. Members use the AMSAT-Australia HF net as a forum.

AMSAT-Australia HF net

The net meets formally on the second Sunday evening of the month. In winter (end of March until the end of October) the net meets on 3.685 MHz at 1000utc with early check-ins at 0945utc. In summer (end of October until end of March) the net meets on 7.068 MHz at 0900utc with early check-ins at 0845utc. All communication regarding AMSAT-Australia matters can be addressed to:

AMSAT-VK,
9 Homer Rd,
Clarence Park, SA. 5034

Graham's e-mail address is:
vk5agr@amsat.org

AMSAT-UK makes a substantial contribution to new satellites

AMSAT-UK is funding the development of two new amateur radio satellites by donating £10,000 to each of two projects in the USA and Germany.

In making these grants, the committee, on behalf of all members of AMSAT-UK, wished AMSAT-NA and AMSAT-DL every success with their projects. The two projects are of course, Project Echo and Phase 3E Express. Echo is due for launch in March 2004 with P3E likely to follow in 2005/2006.

Record breaking solar flares affect HF communications for weeks.

But- so far no damage or deleterious effects on amateur radio satellites have been reported.

Despite the record breaking solar flare activity of Oct/Nov 2003 it appears that amateur radio satellites have emerged unscathed. Some commercial satellites were not so fortunate. After a month long period of intense solar activity including several major interruptions to HF propagation, another massive flare occurred at 1955 UTC on 4th November 2003. This flare is reported as saturating the instruments on observing satellites for about 15 minutes during the peak of the flare which made accurate measurement of the flare's intensity difficult. At that time I was making breakfast and listening prior to my regular morning HF radio sched on 80 metre. There was the usual light crackle of static, not moving the "S" meter but audible and of course the usual very weak Asiatic stations again just barely detectable. Suddenly the receiver went absolutely silent. The stations disappeared and the static disappeared as if someone had thrown a switch. The solar flare had worked its magic. Propagation had dropped out like a light. No contacts took place that morning or later that day. Even local ground wave signals were severely attenuated. Such was the intensity of this particular flare that HF conditions remained completely out for the remainder of that day and into the following day. This is a very rare occurrence. We usually have to wait for the "stuff" of the Coronal Mass Ejection to hit some 24-48 hours after an event before the HF bands are wiped out to that extent and indeed the immediate radiation from such an event usually results in enhanced propagation conditions for several hours. We did experience several smaller flares some 24-48 hours prior to this event but the timing seems to have been too much of a co-incidence to not have been caused in some way with this record breaking flare. Here's part of what the NOAA Space Weather site had to say. "The scientists and engineers who designed the original sensor equipment back in the 1970s had experienced events that caused saturations at much lower levels. They redesigned things to handle X17-class events, thinking that it would be enough. This time, it was not. Since we do not have any accurate record of flare intensity prior to the 1970s, our perspective of this latest series of flares is somewhat limited. Certainly, X-class flares of this magnitude are not regular events. But, they are not unheard of. To pull out a rough estimate, but with very little confidence on this number, on how often we might see such activity, we think this is something we could see every 20 to 40 years". Certainly, the geomagnetic storming of the last few weeks is one of the highest in many years. NASA is planning to launch in November 2005 the "Stereo Mission" which will place an observing space craft leading the Earth's orbit, and another space craft trailing the Earth. They will be able to see around the Sun at what is coming and what has gone. Here's hoping all the amateur radio satellites get through this latest testing situation unscathed.

AMSAT-VK net Echolink proposal

A proposal to overcome the difficulty in communicating Australia-wide on HF.

The AMSAT-VK net has been meeting on HF for many years now and it's always been difficult to settle on a frequency that suits everyone. The best we've been able to come up with so far is to alternate the nets between a summer frequency and a winter frequency. This has still meant that large parts of the country, in particular VK6, experience very difficult conditions and consequently Australia-wide participation has been limited to those occasions in the (distant) past when Graham would conduct the net via Oscar-10 when it was in view of the

whole continent. I well remember these nets as being a highlight when all of VK and ZL could participate on equal terms. For some time now we have been looking at the Internet-based program "Echolink", not as a replacement for the HF net but rather as a possible adjunct to it. In particular VK6 to the eastern states has always been a difficult RF circuit on HF no matter what band is used. Tests have been conducted in the past couple of months and they have proved the viability of using Echolink, HF and VHF linking as a potential way of conducting the AMSAT monthly net. True - Echolink has some problems when used via a dial-up modem and normal telephone line. The number of stations that can connect together is limited to 2 or 3 and packet drop-outs are common giving a rather disjointed air to the conversations. It really comes into its own on broadband however. I have been doing some tests via the AMSAT-NA conference server, which has good broadband capability. It has proved possible to have many stations connected with very good audio and virtually no packet loss, even on my dial-up Internet service. Couple this to the possibility of using HF and local VHF relays and you have a system, which in theory should be able to cope with a truly Australia-wide net. Some time this month (November), Graham and I will be doing a "full dress rehearsal" for the net using either his broadband hub or the AMSAT conference server. We will be trying to get stations in all states to take part. If it all works as hoped we will announce a time and attempt to conduct an Australia-wide AMSAT-VK net as a trial. We are all learners at this new medium so please bear with us in the early stages but do come and join in. You may even be able to help with an RF relay to your local area. If you are an experienced Echolink operator you may be able to give us some pointers to improve the efficiency of what we are attempting to do. More on this topic in the next issue.

Yet another satellite tracking program

Yes folks - it's happened again. Another satellite tracking program has appeared on the scene.

The program is called "Satellite Explorer" version 2.4 and it is available for download from fttp://perso.club-internet.fr/f1orl/index.htm. The site is in French but English pages are available. The tracker has the usual array of goodies and it could be worth a look if the goodies match your requirements.

Half-yearly update

Since this column will be published in the December 2003 magazine, which will hit the streets in early December 2003, I will hold the half-yearly update over to the Jan/Feb issue, which should be with readers in late January 2004.

ISS Amateur Radio equipment upgrades on the way

Russian cargo ships are taking some new and more powerful amateur radio gear up to the International Space Station.

For some time now, following the most recent Space Shuttle disaster, things have come almost to a halt in the further development of the ARISS amateur radio station. However Frank Bauer, KA3HDO, recently outlined the delivery of the so-called Phase 2 Ham equipment to the ISS. A Kenwood TM-D700E VHF/UHF transceiver has already made the trip to ISS. The unit will mean a significant boost to the power output of the ARISS initial station gear from 5 W to 25 W. Next it is planned to send up a Yaesu FT-100D and SSTV equipment, along with some new headsets. That flight is scheduled for January 2004. The next batch of gear will not go up until the space shuttle returns to flight in September 2004. Current plans call for the Expedition 8 crew of Mike Foale, KB5UAC, and Alex Kaleri, U8MIR, to install the Phase 1 and 2 70-cm hardware after ground tests are complete. Previous crews already installed four Amateur Radio antennas to cover HF, 2 metre, 70 cm and microwaves. Software for the D700 has been set up with five program modes, phone, crossband repeater use, APRS, packet and an emergency mode. APRS probably will be the default mode when a crew member is not actively using the ham station. Most recent reports indicate that ISS has been digipeating packets again so get on and try it.

PLEASE NOTE...

The *WIA Exam Service* will close on 22 December 2003 and re-open 27 January 2004.

Exams for marking must be received in this office by Monday 8 December to ensure the results can be posted to candidates before Christmas.

Any orders for exam material must also be received in Federal Office by Monday 8 December.

Any material or orders received after that date cannot be guaranteed to be dealt with before the break and may have to wait until the exam service re-opens.

Group leaders are welcome to place an order on a "just in case" basis. If used the results will not be sent out until early/mid February. This material may also be held for 45 days and then returned for a 100% refund.

VHF/UHF – an expanding world

David Smith VK3HZ – vk3hz@wia.org.au
Leigh Rainbird VK2KRR – vk2krr@telstra.com

Weak signal

David Smith - VK3HZ

Unless you've been in hibernation recently, you would be aware that, in late October, some of the biggest solar flares ever recorded erupted in the direction of Earth. The resulting particle storm caused havoc with HF communications, giving a number of HF DX expeditions substantial heartache.

On the VHF/UHF bands, the sun noise rose to significant levels. However, one positive side to it all was that the auroral zone expanded significantly, resulting in a number of strong auroral openings on 2 m for stations in the mid to southern regions of the country. On the evening of 28th October and the mornings of the 29th and 31st, strong conditions were enjoyed by numerous VK1, VK2, VK3, VK5 and VK7 stations. A gaggle (or should that be "gargle" – if you've heard aurora, you'll know what I mean) of stations descended on 144.100 causing a huge dogpile. Unfortunately, nobody seemed to be doing much tuning around – my calls on 144.120 went mostly unanswered.

Contacts were had with stations at latitudes that are normally too far north for auroral propagation. VK2DVZ in Taree was worked from Melbourne and VK3ZUX in Moe reportedly worked VK4NP in Brisbane. VK3PA in Dunolly in western Victoria also reported working several VK6 stations on CW. Interestingly, the best direction for working the northern stations from Melbourne was at a heading of about 160 degrees, not due south as expected. Also, nearly all stations exhibited a negative Doppler shift of up to 800 Hz.

The second week of November saw good propagation weather conditions descend and park across the southern part of the continent. The Hepburn web site predicted "fair to good" tropo conditions for an extended period and, once again, it was pretty close to the mark. For a number of days, the Mt Gambier and Adelaide beacons were enhanced at "fair to good" levels. A number of contacts were had from VK3 into Adelaide.

Then, on 11th November, the Esperance beacon was heard in Mt Gambier at reasonable levels. Finally, on the evening of the 12th and morning of the 13th, Wally VK6WG in Albany was worked in Melbourne and further east on 2 m. On 70 cm, he also worked Roger VK5NY in Adelaide and Colin VK5DK in Mt Gambier. The Esperance 2 m beacon was also heard at good strength in Melbourne. As I write, the opening is still in progress – very distracting!

Field days

The recent VHF/UHF Spring Field Day over the weekend of 1st-2nd November saw a fairly disappointing turnout of portable stations.

A number of factors were against them, not the least being the arctic weather conditions over the weekend. Some of the higher sites around Victoria had received several centimetres of snow in the days preceding the event and were not the place to be. Several Hamfests had also been scheduled for the same weekend, attracting a number of people away. The only club station that I heard was the Geelong AR Club in the Barrabool Hills near Geelong. These hardy souls had every band up to 10 GHz covered. Unfortunately they could not find any takers for anything above 2.4 GHz and only one station on that band.

Rex VK7MO spent a cold Saturday afternoon on the top of Mt Wellington with conditions that were the poorest he has experienced. His only "DX" contacts were with VK3AFW on 2 m SSB and 70 cm JT44 and to VK3HZ on 2 m JT44. Hopefully, conditions for the Summer Field Day will be much improved.

New beacon

A new 23 cm beacon has been activated in the Melbourne area. Clint VK3CSJ reports that John VK3YTV has commissioned VK3RLP running 3.75 watt on 1296.535 MHz. Antennas are two corner reflectors facing west, one facing north and one facing due east. The beacon runs FSK ident every 20 second. Its grid locator is QF21nu. Reception reports are requested to Phil VK3YB at PPAVEY@bigpond.com.

Submissions to ACA

As part of the recent submissions to the ACA, it is good to see that a number of weak signal operators have put up submissions for a revision of the VK maximum power limits. It is puzzling that Australian amateur radio operators are limited to 400 W SSB / 120 W CW whereas the US operators, with similar living conditions, are allowed 1500 W on all modes. It puts the VK operator at a substantial disadvantage for the likes of EME operation, where CW is the norm and giving away 11 dB of power is critical. Provided that the station complies with the recently introduced EMR regulations, then we should be able to use equipment of equal capabilities to that available to amateurs in other countries.

Long distance communication

To finish with a report about the far upper reaches of UHF, it was interesting to hear of a recent QSO between WA1ZMS/4 and W4WWQ/4. On 11th November, they communicated over a distance of 0.521 km on 403 GHz. Weather conditions were good but still resulted in atmospheric loss of 14.4 dB per km.

Further attempts will be made during the colder, dryer winter months in the hope of breaking the 1 km barrier.

continued next page

EME

Doug McArthur VK7UM

The first weekend of the two-weekend ARRL International EME contest was held over October 18-19, 2003. If we pick a higher northern declination moon for contests then, down here, I will be working with permanent ground noise! Unfortunately it was not much of a first weekend for me as I had moon set 13 minutes after the contest started and the second active European window did not start until after the contest finished. I also had gale force winds which prevented me getting on for the first North American window and then again for only one hour during the only second European window. All up I had less than 4 hours operating for 30 QSOs and only 17 multipliers. The good thing is that I have left plenty of stations to work during the second weekend! Only new station worked (apart from Gudmund at JW) was KJ7F.

During the only real period I had into Europe, the polarity was a little different from what I would class as normal. This is probably due to the high declination of the moon. It seemed that my signal was quite down on normal (although the echoes here seemed normal) and I ended up doing the chasing instead of being chased! A novel experience for me! I would guess that Faraday etc. left my signal into Europe at 45°. I noticed on Saturday that Gudmund was totally vertical incoming (like all Europeans except HB9Q [circ]). I thought he was circular polarised? This seemed to be the case where on Sunday his transmission was equal in both horizontal and vertical as I expected. I was transmitting horizontal for all European QSOs. The North American window was however pretty normal. A little libration on moonrise (Sunday) but all except VE6TA, were coming in vertical (USA and JA) and I was transmitting vertical as well. I don't know what Grant runs or how long he may have been calling me, as I was not looking horizontal as often as I should.

What with all the wind (over 80 kph) and the frustration of not being able to get on, I entertained myself by watching the various loggers. I don't know whether to be amazed or disappointed at the audacity of many "QSOs" seen taking place. One nice thing was that I did not see one on 70 or 23 cm. It will be interesting to see the eventual ARRL logs. I have cut and pasted the call signs and comments for enlightenment! Spotting however seems to have got out of hand and I was somewhat relieved to not find myself "spotted".

Again a lot of fun and frustration with, in the most part, great CW operating.

Digital Modes

Rex Moncur VK7MO

I should call this article The "JT44 ONEs and ZEDs" Mystery.

When using the WSJT program in JT44 mode, I have noticed that when sending Rogers and a report (e.g. RRRR191919), the numbers seem to decode much better than the letters. It seems that with weak signals in the range -18 to -24 dB, "1s" have a 2 to 3 dB advantage over "Zs". In direct computer to computer tests using my interface box, the issue shows up even more markedly with about a 6 dB difference. I think the reason it shows up better in an off-air test is that for real tropo signals there is quite high variability during a 30 second period which masks the effect.

Tests were run by a number of stations, many of who reported similar findings. After much detective work, I discovered that my laptop was generating tones that were slightly off frequency. The problem appears to be in the computer soundcard. Using the FSK441 "Tune" mode to obtain a steady signal, the nominally 2205Hz signal was found to be 2 Hz low. An informal poll of other stations revealed that many of them were also generating tones off frequency – up to 15Hz high. Interestingly, laptop computers seem to be the prime culprits here with 5 out of 6 showing 10Hz or worse error, while all the desktop computers were within 1Hz of the correct frequency.

JT44 can cope with frequency offsets, as it must cater for slightly different station frequencies. However, once the "sync" signal frequency has been found by the program, all other tones are expected to be quite accurately located relative to the sync tone. Unfortunately, in the case of the laptop computers, this is not the case with the higher tones being increasingly inaccurate ("Z" is the highest). The result is that the high tones fall off the edges of the digital filters, resulting in poor decoding.

Joe Taylor, W1JT – author of the WSJT program – is looking into the problem. As he said, "Apparently I underestimated just how far some computer makers will go to save a dollar or two".

Joe also mentioned that he is working hard on a new digital mode to replace JT44 that is showing performance gains of 4-6 dB. He hopes to have some code ready for on-air testing before too many more weeks.

WICEN:

Amateur Radio Operators helping the community in times of trouble.

WICEN is a face of Amateur Radio which the public see mainly in exercises as they hone their skills and knowledge of propagation in their local areas.

WICEN helps community organisations run activities safely over large areas and in rough country. These exercises can be fun, but the main reason is to increase preparedness just in case our help is needed.

Have you considered joining WICEN?

2 m & 70 cm FM DX

Leigh Rainbird VK2KRR

Well ... what can I say about 2 & 70 FM DX for the month of October? Nothing much really. It has been rather disappointing in the south of the country. No major duct openings for 2 months at the time of writing. We did however have an incidence of a rather unusual propagation mode, at this stage noted as "Non Ducting Tropo".

But, for the operators on the northern half of the Queensland coast it's been quite a different story with some red hot ducting conditions as far as Papua New Guinea and New Caledonia.

If you weren't on air earlier in October you missed out on contacting Felix VK4FUQ who was portable for a few days at Hallorans Hill on the Atherton Tablelands. Felix was running 2 m only with a 3 element Yagi and about 45 watt output. Felix had some good contacts both simplex and via repeaters. Some of the simplex contacts were VK4HSV in Townsville and VK4FNQ near Charters Towers, both around 300 km. Felix also made it to the Townsville repeater and to Mackay, 600 km.

Midway through the month and mentioned earlier was "Non Ducting Tropo" or NDT. What is this I hear you say? Put simply, it's an enhanced signal condition when there is actually no ducting. It provides better 70 cm conditions rather than 2 m.

I had noted this only once before where 70 cm was better than 2 m but took no notice. What really brought this out in the open, was extra reports from other operators on the FM DX Group E-mail list.

Initially I think Chris VK3VSW in Geelong was the first to report: "Just worked VK7LCW - Peter on both 2 & 70 cm this evening at around 10:15 UTC. Signals on 70 cm were very very good, 5 X 9+ 20dB, 2 metre were 5 X 3 ... interesting ..."

Then Brian VK5ZMB in Gawler: "There has been good 70 cm ducting tonight between my QTH (Gawler 40 km north of Adelaide) and Pt Lincoln, approx. 250 km. The Pt Lincoln 70 cm repeater has been a steady S7 to 8 all evening and I managed to work VK5RF via the repeater. Strangely though I could not hear the Pt Lincoln 2 m repeater which I regularly can hear and was S9 most of yesterday."

Bill VK5ACY on Kangaroo Island did not send an email, but reported on the VK/ZL Logger about good 70 cm conditions to Mt Gambier beacon, but not as good on 2 m.

At The Rock, I noted extended range with reasonable signals during the day, but with very bad fading or QSB. At times I would describe it as 'violent' crashes of the signal into the noise then back up to something like S9 in some cases. At times this could occur every 10 seconds or so. I also noted an extremely low background noise level, much lower than normal, which gradually rose again later in the afternoon.

I did not note the exact timing, but some time around 10 pm I noted signals from 2 m repeaters were quite good, and were extremely stable, no QSB at all. Bendigo, 314 km away was constant S9, Macedon 324 km was S7-8. Someone triggered the Macedon 70 cm repeater, which caused me to check 70 cm. I noted Bendigo 70 cm at S9+40dB, though I did not turn the antennas directly on to Macedon 70 cm, it was something like S9+10dB. I could also get the Grampians 70 cm at 471 km at about an S7 nothing from there on 2 m.

Some points on NDT -

1. Is commonest during high pressure conditions. *NDT is often best when the high pressure is in decline and moving east.*
2. Occurs at VHF, UHF and higher frequencies, *longer wavelengths do not usually enjoy as good NDT as shorter ones.*
3. Best conditions usually occur early morning or *late evening.*
4. *Fading (QSB) is a problem.* May be slow and very deep. May include faster 'flutter' fading.

From the above points, I have underlined some parts which I thought were of particular relevance to what was observed.

From point number 1, we were in the tail end of the current high pressure system moving east.

Point 2, 70 cm was much better than 2 m.

Point 3, late evenings was generally noted.

Point 4, although none of the other stations that submitted reports mentioned QSB, I did note very bad QSB here during the day.

Ducting graphs from around the time of the various reports show *no ducting at all.* Also at the time there were high winds and rainfall occurring in the area. Very interesting.

In the latter part of the month, things really got moving in the far North Queensland coastal areas. The Hepburn Charts gave indication that some good ducting may be available, and indeed it was. Many stations passed signals back and forth making very good contacts.

Creating a good deal of attention has been the presence of Jim P29JB's signal along the VK4 coast. Jim is transmitting from Papua New Guinea and is running a 4 element quad antenna and anywhere between 15 to 90 watt. Jim has been noted making contacts into the following 2 m repeaters – Townsville 1088 km, Mackay 1315 km, Gladstone 1655 km and Gympie 1958 km.

Mike VK4MIK in the Atherton Tablelands has been having a big go and making the most of the conditions. Mike's most distant repeaters worked have been Hodgson Range near Clermont, 640 km, then into Mackay at 560 km. To Mike's surprise he has also been able to get into the Hayman Island repeater a number of times which is 450 km.

Felix VK4FUQ at Ingham has on occasion been able to work into the Mackay and Mt Seaview repeaters, distances being around 415 km.

Late reports from Gary VK4ABW near Townsville indicate the path from VK4 to New Caledonia was present at times. Gary worked FK8HA and FK8GX through the Noumea repeater on 146.800 and was then able to work them simplex. Well done Gary, approximate distance is 2074 km! I believe Gary has also been working simplex to Jim P29JB in Papua New Guinea with an approximate distance of 1100 km.

ar

HF Predictions

by Evan Jarman VK3ANI
34 Alandale Court Blackburn Vic 3130

These graphs show the predicted diurnal variation of key frequencies for the nominated circuits.
These frequencies as identified in the legend are:-

- Upper Decile (F-layer)
- F-layer Maximum Usable Frequency
- E-layer Maximum Usable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency (D region)

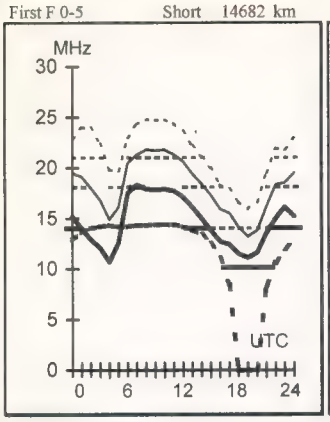
Shown hourly are the highest frequency amateur bands in ranges between these key frequencies, when usable. The path, propagation mode and Australian terminal bearing are also given for each circuit.
These predictions were made with the Ionospheric Prediction Service program: ASAPS Version 4

December 2003
T index: 45

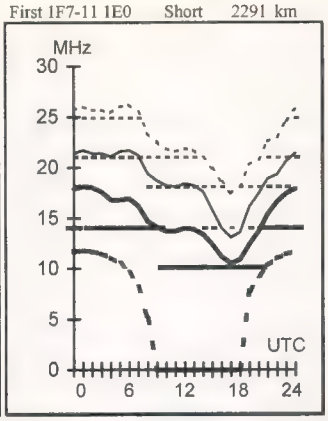
Legend

Frequency scale: UD, E-MUF, OWF, F-MUF, ALF, >10%, >50%, >90%
Time Scale

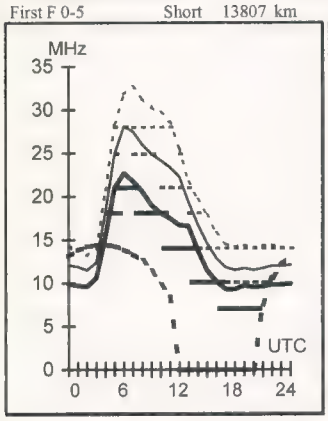
Adelaide-Accra 242
First F 0-5 Short 14682 km



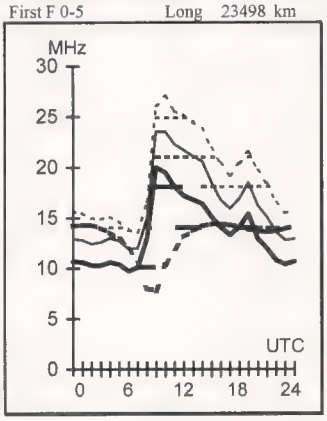
Brisbane-Auckland 123
First 1F7-11 1E0 Short 2291 km



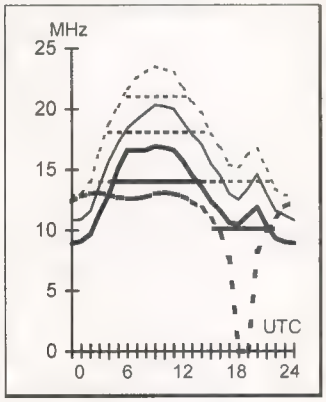
Adelaide-Moscow 318
First F 0-5 Short 13807 km



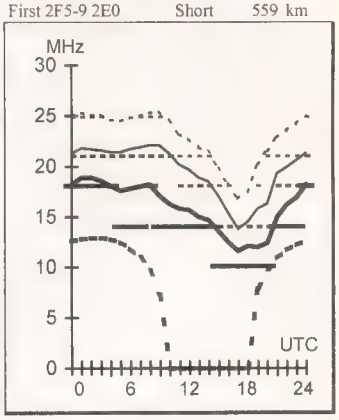
Brisbane-London 147
First F 0-5 Long 23498 km



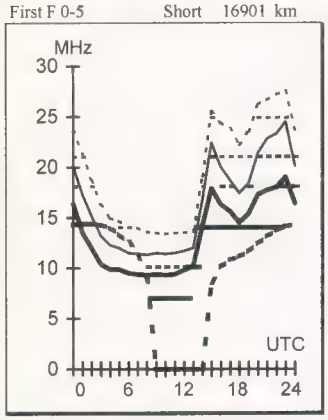
Canberra-Capetown 219
Second 4F8-12 4E0 Short 10779 km



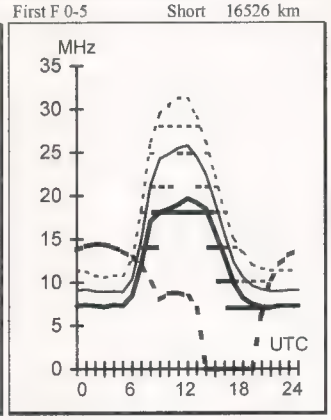
Darwin-Invercargill 144
First 2F5-9 2E0 Short 559 km



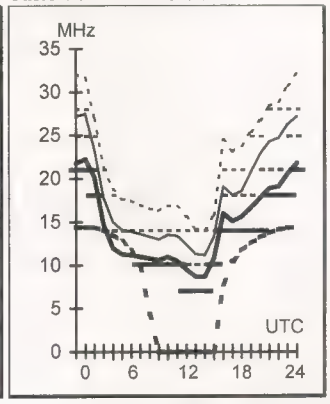
Adelaide-Ottawa 58
First F 0-5 Short 16901 km



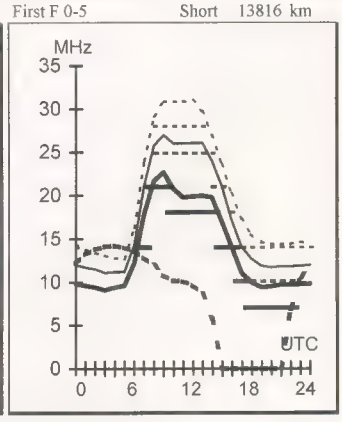
Brisbane-London 327
First F 0-5 Short 16526 km



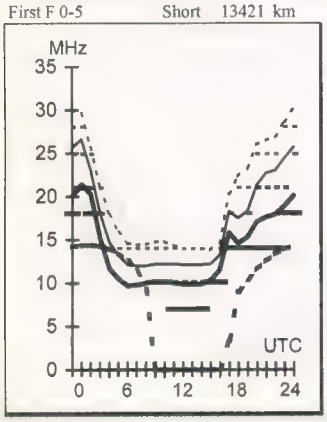
Canberra-Los Angeles 62
First F 0-5 Short 12309 km



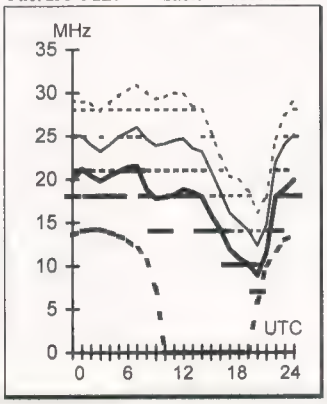
Darwin-Paris 322
First F 0-5 Short 13816 km



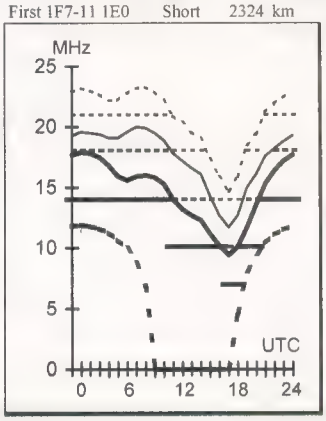
Adelaide-Vancouver 49
First F 0-5 Short 13421 km



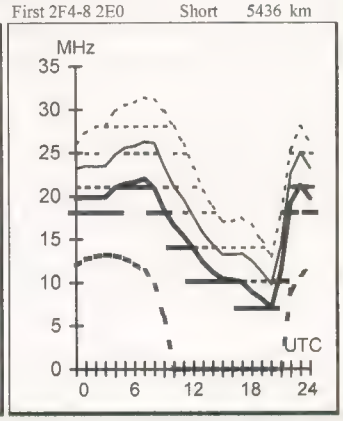
Brisbane-Manila 320
First 2F3-8 2E0 Short 5811 km



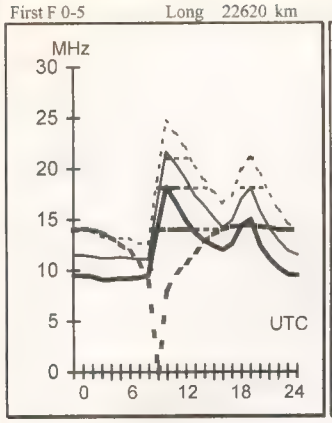
Canberra-Wellington 115
First 1F7-11 1E0 Short 2324 km



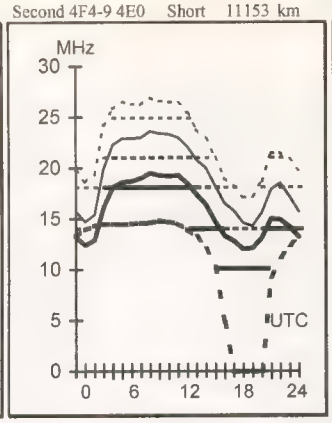
Darwin-Tokyo 10
First 2F4-8 2E0 Short 5436 km



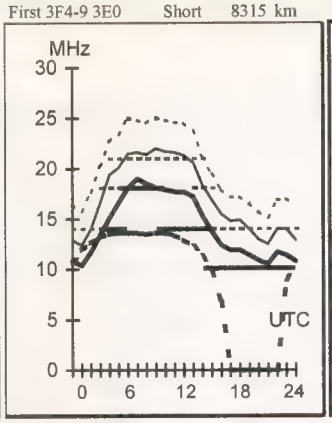
Hobart-London 123
First F 0-5 Long 22620 km



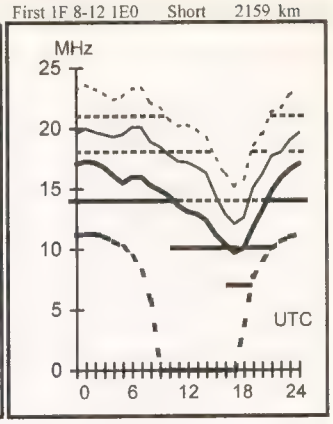
Melbourne-Lusaka 241
Second 4F4-9 4E0 Short 11153 km



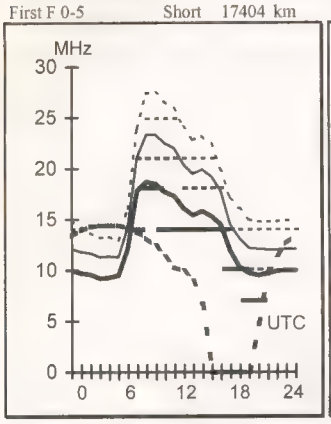
Perth-Johannesburg 248
First 3F4-9 3E0 Short 8315 km



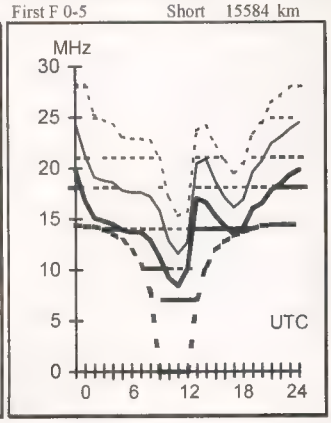
Sydney-Auckland 106
First 1F 8-12 1E0 Short 2159 km



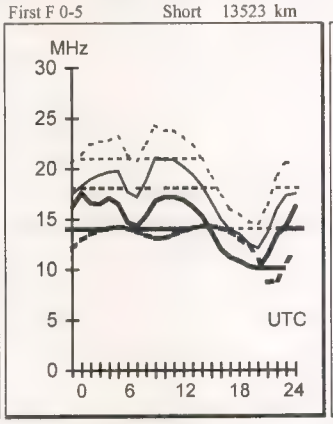
Hobart-London 303
First F 0-5 Short 17404 km



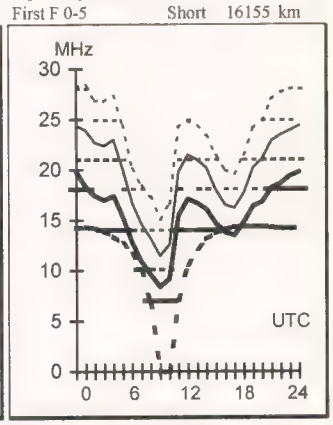
Melbourne-Miami 94
First F 0-5 Short 15584 km



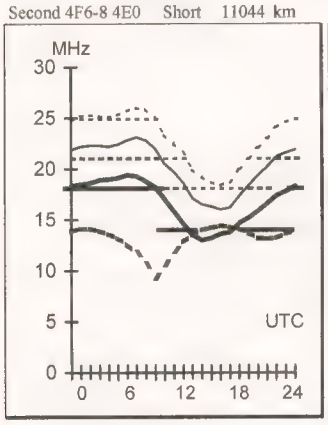
Perth-Rio de Janeiro 203
First F 0-5 Short 13523 km



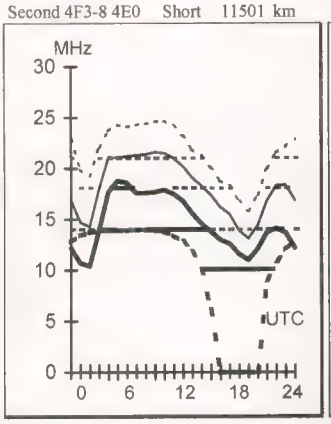
Sydney-Barbados 119
First F 0-5 Short 16155 km



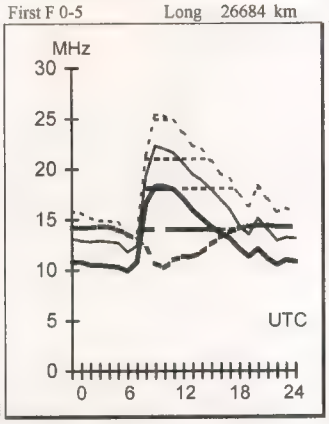
Hobart-Montevideo 161
Second 4F6-8 4E0 Short 11044 km



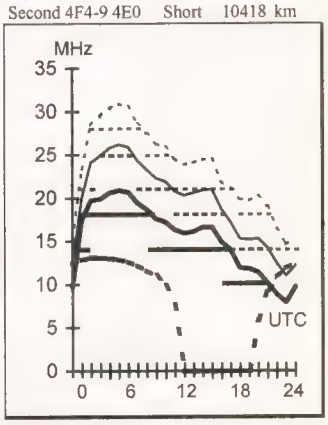
Melbourne-Nairobi 258
Second 4F3-8 4E0 Short 11501 km



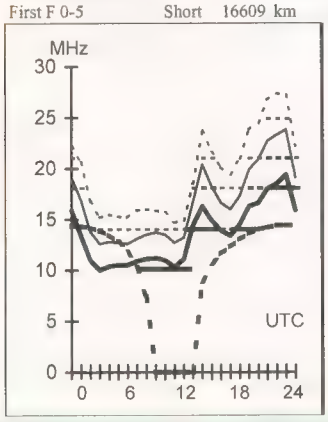
Perth-Rome 123
First F 0-5 Long 26684 km



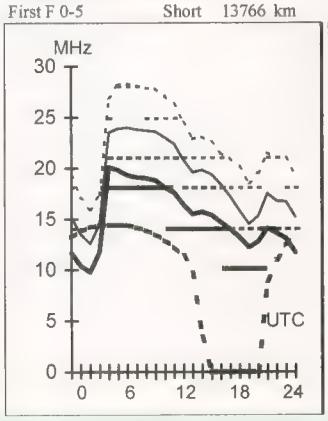
Sydney-New Delhi 302
Second 4F4-9 4E0 Short 10418 km



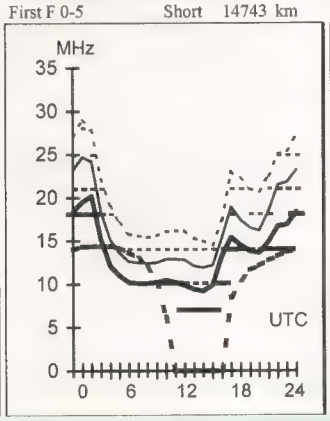
Hobart-New York 80
First F 0-5 Short 16609 km



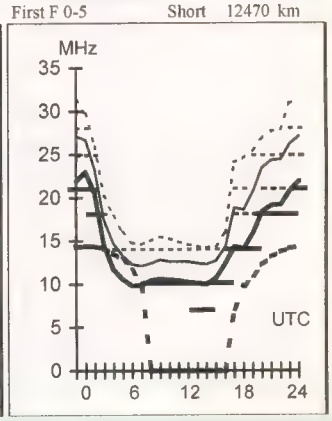
Melbourne-Tel Aviv 287
First F 0-5 Short 13766 km



Perth-San Francisco 66
First F 0-5 Short 14743 km



Sydney-Seattle 47
First F 0-5 Short 12470 km



Technical Abstracts

Gil Sones VK3AUI

Circularly polarised twisted loop

An interesting twisted loop providing circular polarisation appeared in the *Technical Topics* column of Pat Hawker G3VA in *Rad Com* May 2003. The design was drawn to Pat's attention by Dr Brian Austin G0GSF who saw a paper by Rong-Lio Li and Dr Vincent F Fusco , both of Queen's University Belfast. The paper was published in *IEEE Transactions on Antennas and Propagation* , October 2000, pp 1377-1381.

Interestingly the basic element , as G0GSF points out, is in the form of the VK2ABQ two element HF array developed empirically in the 1970s by the late Fred Caton VK2ABQ/G3ONC. VK2ABQ turned a one wavelength horizontal loop into driven and parasitic elements by introducing small gaps in the loops using buttons as insulators.

The evolution of the circularly polarised twisted loop is shown in Fig 8. The Queen's University team took the square one wavelength loop as shown in Fig 8(a). Then they turned it into the form used by VK2ABQ in Fig 8(b) although they appeared to be unaware of the technique devised by VK2ABQ 30 years earlier. Finally they twisted the gapped loop into the form shown in Fig 8(c). The radiating sides "1" and "2" were made perpendicular to one another and they used an insulated overpass connection at the intersection of the two sides to prevent electrical short circuit. This resulted in a quasi planar structure with the phase relationships indicated.

The geometry and sizes of the twisted loop sides "3" and "4" have to be optimised to obtain optimum circular polarisation. The gaps also would need adjustment . Matching at the feed point would also require some work to obtain a suitable match.

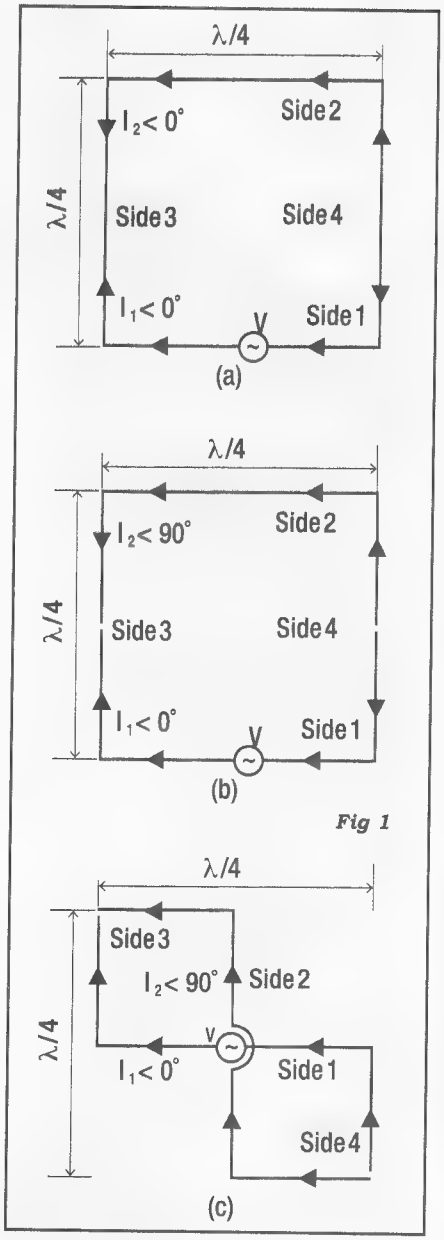


Fig 8. Evolution of Circularly Polarised Twisted Loop.

Hands free microphone for Yaesu FT817

An adaptor to allow a hands free microphone with the Yaesu FT817 appeared in *Rad Com* April 2003. The adaptor was produced by Mike Grierson G3TSO. The adaptor allowed a headset originally intended for a mobile phone to be used. The headset had an earpiece and a noise cancelling electret microphone and was fitted with a lead terminated in a 2.5 mm stereo plug.

The adaptor circuit is shown in Fig 9. It is built into a small plastic box and provides facilities for interfacing the various leads and connectors and a spring loaded PTT switch. The FT817 microphone lead presents a problem as it uses an RJ45 connector. The available leads are unscreened and terminating the RJ45 plug requires a special crimp tool. Mike managed with some difficulty to terminate a curly cord with a screened mic lead by crimping each pin

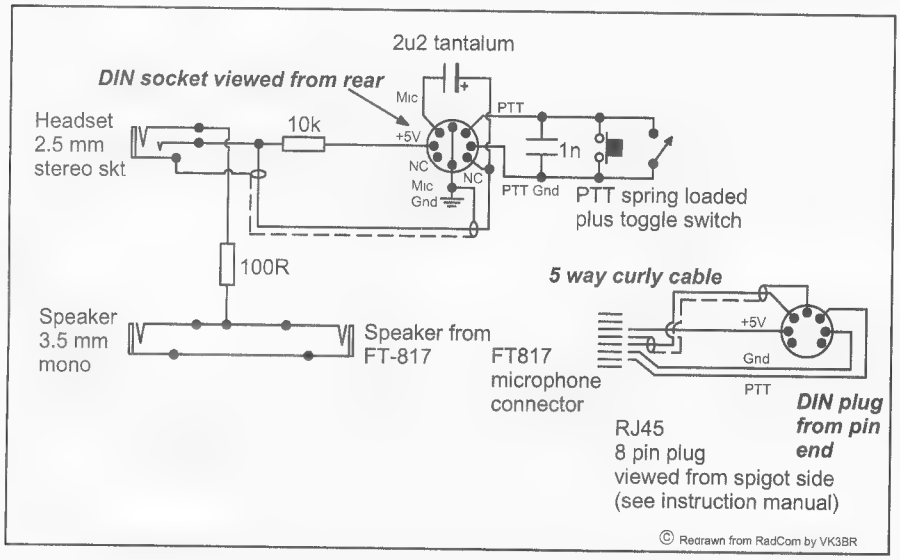


Fig 9. FT817 Interface Box For Headset

Gil Sones VK3AUI

individualy whilst the connector was held in a small vice. The crimp tool is expensive but the connectors are cheap and so a couple of attempts is a viable alternative.

The PTT earth and the Microphone earth are kept separate to avoid earth loops and feedback. The DC supply for the headset insert is obtained from the 5 volt supply present in the FT817 mic lead. The mic lead is decoupled from the DC by a 2.2 Microfarad capacitor in the interface. The value of the series resistor feeding the 5 volt supply to the microphone insert can be varied so as to obtain a microphone level consistent with the normal FT817 microphone.

The external speaker from the FT817 is extended to the interface and feeds the earpiece via a series resistor. The earpiece volume is adjusted by varying the value of the series resistor..

Watchdog timer

A useful device for those using computer control of their transmitter , such as is used in many digital modes, appeared in *Rad Com* April 2003 in the *Data Column* of Andy Talbot G4JNT. In the event of a program glitch or other computer problem the transceiver can be left in transmit for an extended period. A watchdog timer monitors the PTT line and disconnects if the PTT time is excessive.

The watchdog timer is shown in Fig 10. The unmarked diodes are small signal Si type 1N4148 or similar. Most programs uses the serial port RTS/DTR line to drive the PTT line and the timer is inserted between this and the PTT line. This replaces the normal PTT interface circuit. The unit is powered direct from the RS232 line as it draws very little current. The timeout circuit passes normal PTT signals straight through. However if the PTT line is held for longer than approximately 4 minutes the PTT line to the transceiver is released. The LED should be a high brightness type as little current is available to drive it.

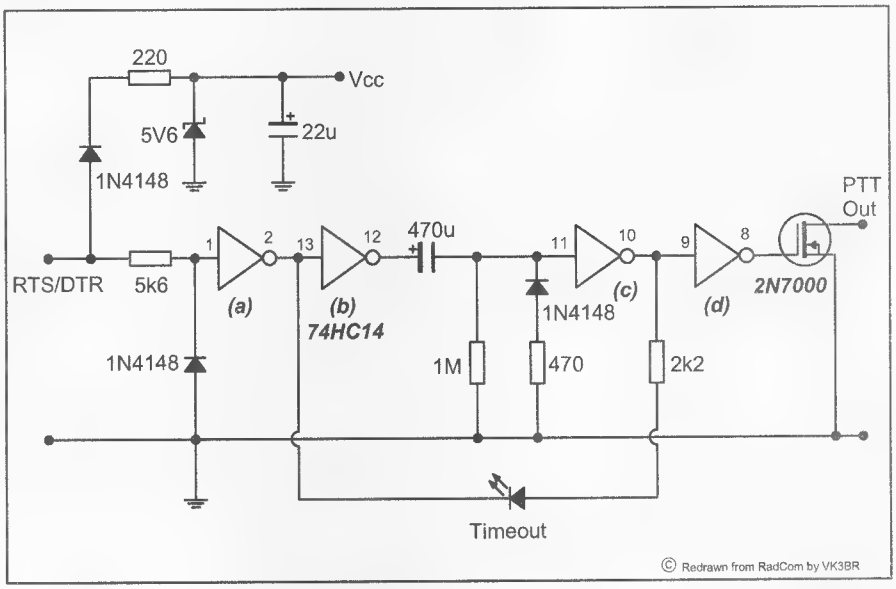


Fig 10. Watchdog Timer.

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Over to you

Some hams are frequency hogs

It is with regret that I must write to you and heap scorn and condemnation on some of our fellow ham operators.

I refer specifically to those of our fraternity, who insist on operating within one or two kilocycles of recognized DX spot frequencies viz. 14.195 MHz, 21.295MHz and 28.495 MHz etc., under the guise that nobody has the God-given right to any specific frequency. This fact is true and is universally acknowledged by all in our fraternity, but what about the "gentleman's agreement", that unwritten law where certain specific frequencies are to be voluntarily left vacant and freely available for use by these rare DX stations.

It is disappointing that so many of this class of operator should exist in our ranks. It is also significant that this group are usually the most reluctant to shift frequency if requested.

A station operating just one or two kcs away from a DX spot certainly does not offer an operating space free of QRM, but instead reflects a total lack of operating prowess, consideration and a high degree of rudeness on the offending operator's part towards our DX friends. Although most DX-expeditions pre-announce their operating information in the DX bulletins, dates and frequency information are regularly discussed in "on air" conversations by DX hunters looking for that new one.

We are indeed fortunate that some groups within our great fraternity have seen fit to extend the realm of our hobby by mounting DX-expeditions to rare and exotic countries not usually heard on the amateur bands. These DX-expeditions can come at horrendous financial cost to both the individuals concerned and the DX groups under whose umbrellas they often operate, yet at the same time, they give the general amateur fraternity the opportunity to extend their interest and "get 'em in the log".

As a keen DX-er myself, I plead with the offenders to show some restraint, consideration and tolerance. Just because you can't hear a station, others probably can and with heavy QRM coming from one or two kcs away the chance to work that rare one is often lost.

Alan Sorensen ZL3JU

Views expressed in the 'Over to you' column are those of the authors, and do not necessarily reflect the policies of the Wireless Institute of Australia.

Send contributions to:
The Editor
Amateur Radio Magazine
34 Hawker Crescent
Elizabeth East SA 5112
or email:
edarmag@chariot.net.au

Polarisation of VHF beacons

I was rather surprised to see someone of Tim Mills' long experience questioning the desirability of horizontal polarisation for the VHF beacons located at Dural (VK2 News, November AR). While Tim may not have had a horizontally polarised antenna up since he retired the 522, I can assure him that if the VHF beacons go vertical, most of their functionality will be lost. Apart from their usefulness in indicating band openings on the various tropospheric modes, there is a small but important group of people who constantly monitor the VHF beacons using weak signal detection software to record tropospheric conditions. Most beacon users have made a significant investment in horizontally polarised antenna arrays, which discriminate upwards of 20dB against vertically polarised signals. So putting the beacons vertical would make as much sense as putting the repeaters horizontal.

In any case I am at a loss to understand how placing horizontally polarised antennas on a 20 metre pole would be significantly less expensive than placing vertically polarised antennas in the same position. The coax run would be the same either way - yes, you can feed multiple antennas with one piece of coax - so we must be talking about a couple of dollars worth of mounting hardware. I was under the impression that the rental income from the commercial installations at the Dural site was supposed to fund the amateur installations.

73 Mike Farrell VK2FLR

Memories of Ross Hull activities

The front cover of the November 2003 issue of AR brought back memories of my Ross Hull activities from Ceduna, SA in the years 1971-1976.

Coincidently on November 15 2003 I was in Ceduna and at llam could copy FM broadcast stations from Northern NSW on the whip and radio of a hired 4WD.

Obviously still a top VHF/UHF location!

73 de Kerry Adams VK2BXT (ex VK5SU)

Virus attack

Having spent the last few weeks fighting a virus on my computer I thought my findings could be of interest to others who like me use a computer, but are not experts.

1. **With viruses never lower your guard!** Having read and been told by various people that the current spate of viruses only exploited problems in later versions of Windows, and certainly not Windows 98 which I use, I was lulled into a sense of false security. I received an email from Microsoft and being late at night, tired and contrary to my normal procedures I foolishly opened it. For the next week I received hundreds of undelivered mail messages and friends contacting me to say I had a virus. The web site of the server had posted a message about the virus two days prior to me receiving it, but since I had already updated my antivirus checker (try to do it weekly) I didn't know about this virus - nor did my antivirus checker have the checks for it. With advice from the server people I eventually thought I had rid myself of it and certainly the undelivered mail messages stopped after about a week. Four weeks later, almost to the day, undelivered mail messages started reappearing in even greater numbers.
2. **What did the virus do?** The first thing it did was to nullify my virus checker by making the call to its starting address an illegal command. It then went through my address book and all emails in memory and sent itself to every one of them. (Often one

sends an email to a group of people and so you are one of several addresses listed on the received mail. Even these addresses the virus seemed to extract. Senders beware.) It then set up in my Windows operating system a file called icgfpa.exe ensuring that every command/operation must refer to it. Finally, this file must contain a timer/counter so that four weeks later it started propagating itself again. At this point I realised the virus was still in my operating system, changed my antivirus checker and located it. I had the "W32Swen" virus. The antivirus checker was unable to clear or quarantine the virus so blocked access to the file icgfpa.exe and since every operation went looking for this file my computer froze up. Changing the file name by one character did not solve the problem for my computer simply sent messages it couldn't find the file icgfpa.exe and proceed. The only solution to the problem was to again reload the hard drive with the operating system and all application software.

3. **Getting expert advice!** Not wanting to go through all this again I sought some advice from the experts at work on how to go about configuring my computer to minimise efforts, should in future I get another virus. Their advice. Partition the hard drive into two, C and D drives (My machine had a 20Gb hard drive so was split up with C, 5Gb and D, 15Gb). Into C put the operating system and all programs. In D put all data. Using the program Drive Image (PowerQuest) create an image of all the contents of C drive and place it in the D drive. Normally, a virus will affect the operating system or program software so only the C drive is corrupted. Now its former contents can simply be regenerated from the image in the D drive. Should you wish to have further protection (such as a crash of the hard drive altogether) then store the image in D drive in 700Mb sections and then copy these to CDs. Drive Image allows you to do this - simply follow the commands.
4. **Updating Antivirus Software**. At work the software is automatically updated on a daily basis. At home I use my machine intermittently and am not prepared to log on daily. However, today I am very much aware that with the proliferation of viruses regular weekly updates are inadequate. Consequently my new approach is that whenever I go on the web or send/receive an email the first thing I, do that day is an update of the antivirus checker. Days I use the machine off line I do not bother to update.

I hope these experiences will be of help to other amateurs.

Malcolm, VK5BA

Silent Key

Lloyd (John) Gough VK5QD

John VK5QD passed away at Kapunda S.A. on 16 August 2003 aged 73 years.

He was licensed around the year 1977 and had operated, using the callsign indicated above, from metropolitan Adelaide locations prior to moving to the country town of Kapunda in about 1987.

John was a rather quiet gentleman who worked away and made his contributions somewhat behind the scenes. Those who knew him soon became aware of his considerate nature and his ability to quickly sum up and see various situations with a proper and clear perspective.

He was a keen HF operator and spent a deal of time working both local and DX stations. He also operated a Packet Radio setup and from time to time provided some most erudite comment as part of discussions that took place using this mode. He certainly had an enquiring mind.

Whilst he was always prepared to offer advice and assistance to others whenever he could, he was not too shy to ask for advice and to seek help on technical matters, always doing so in a humble manner.

John was always willing to help other people if they had difficulties. In one notable instance, where a visiting American Amateur operator and his XYL were involved in a serious motor accident in the Kapunda area, John promptly provided the visitor, whose mobile radio gear had been damaged in the crash, with suitable loan equipment to allow him to continue to operate during a fairly lengthy convalescence in the local hospital.

John also acted as the VK5 Divisional QSL Manager for several years.

He followed a military service career for most of his working lifetime. He attained the rank of Staff Sergeant in the Royal Australian Army Service Corps (RAASC) and saw service in the Korean campaign in the 1950's as well as in New Guinea and with a number of general Australian postings.

Our condolences are extended to John's wife Bronwynne, his 5 children as well as his grandchildren and great-grandchildren.

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C/o P.O. Box 346, Healesville, Vic, 3777

VK3GHA

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For booking of trestles and further information:
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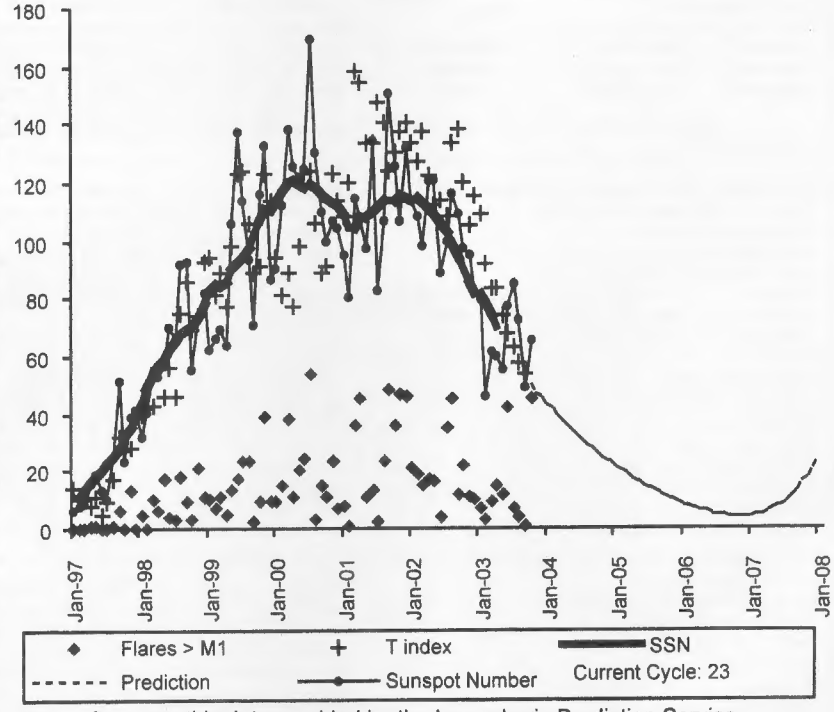
Carol 5778 7518
or email to gpt@celestial.com.au

Sunspot Numbers

Monthy Sunspot Average Oct 2003: 65.6
Annual Sunpot Average Apr 2003: 71.4



Drawn from monthly data provided by the Ionospheric Prediction Service

Division Directory

The Amateur Radio Service exists for the purpose of self training, intercommunication and technical investigation. It is carried out by amateurs who are duly authorised people interested in radio technique solely with a personal aim and without pecuniary interest.

The Wireless Institute of Australia represents the interests of all radio amateurs throughout Australia. National representation is handled by the executive office under council direction. There is one councillor for each of the seven Divisions. This directory lists all the Divisional offices, broadcast schedules and subscription rates. All enquiries should be directed to your local Division.

Broadcast schedules

All frequencies MHz. All times are local.

VK1 Division Australian Capital Territory,
GPO Box 600, Canberra ACT 2601

President	Alan Hawes	VK1WX
Secretary	Deane Walkington	VK1DW
Treasurer	Bob Howie	VK1HBH

VK1WI transmits each Thursday evening at 2000 hrs local time on VK1RGI 146.950 MHz and 438.375 MHz including the linked repeater system on VK2RGN Goulburn, VK2RHR High Range, VK2RMP Madden Plains and VK2RTW Wagga Wagga.
VK1 Home Page *http://www.vk1.wia.ampr.org*
Annual Membership Fees. Full $80.00 Family $38.75 Pensioner or student $71.00. Without *Amateur Radio* $48.00

VK2 Division New South Wales
109 Wigram St, Parramatta NSW
(PO Box 9432, Harris Park, 2150)
(Office hours Tue., Thu., Fri., 1100 to 1400 hrs.)
Phone 02 9689 2417
Web: *http://www.wiansw.org.au*
Freecall 1800 817 644 (NSW only)
e-mail: *vk2wi@wiansw.org.au*
Fax 02 9633 1525

President	Brian Kelly	VK2WBK
Secretary	Owen Holmwood	VK2AEJ
Treasurer	Noel May	VK2YXM

VK2WI transmits every Sunday at 1000 hrs and 1930 hrs on some or all of the following frequencies (MHz): 1.845, 3.595, 7.146, 10.125, 14.170, 18.120, 21.170, 24.950, 28.320, 29.170, 52.150, 52.525, 144.150, 147.000, 432.150, 438.525, 1273.500. Plus many country regions on 2m and 70cm repeaters. Highlights are included in VK2AWX Newcastle news Monday 1930hrs. on 3.593 , 10 metres and local repeaters. The text of the bulletins is available on the Divisional website and packet radio. Continuous slow morse transmissions are provided on 3.699 and 145.650. VK2RSY beacons on 10m, 6m, 2m, 70cm and 23cm. Packet on 144.850.
Annual Membership Fees. Full $80.00 Pensioner or student $63.00. Without *Amateur Radio* $50.00

VK3 Division Victoria
40G Victory Boulevard Ashburton VIC 3147
(Office hours Tue 10.00 -2.30)
Phone 03 9885 9261
Web: *http://www.wiavic.org.au*
Fax 03 9885 9298
e-mail: *wiavic@wiavic.org.au*

President	Jim Linton	VK3PC
Secretary	John Brown	VK3JJB
Treasurer	Jim Baxter	VK3DBQ

VK3BWI broadcasts on the 1st Sunday of the month at 20.00hrs Primary frequencies, 3.615 DSB, 7.085 LSB, and FM(R)s VK3RML 146.700, VK3RMM 147.250, VK3RWG 147.225, and 70 cm FM(R)s VK3ROU 438.225, and VK3RMU 438.075. Major news under call VK3ZWI on Victorian packet BBS and WIA VIC Web Site.
Annual Membership Fees. Full $83.00 Pensioner or student $67.00. Without *Amateur Radio* $51.00

VK4 Division Queensland
PO Box 199, Wavell Heights, Qld. 4012
Phone 07 3221 9377
e-mail: *office@wiaq.powerup.com.au*
Fax 07 3266 4929
Web: *http://www.wia.org.au/vk4*

President	Ewan McLeod	VK4ERM
Secretary	Bob Cumming	VK4YBN
Treasurer	David Gulley	VK4DCG

EVERY SUNDAY, at 9am LOCAL (Sat 2300 UTC). From Far North Queensland On 7.070/2 MHz. From South East Queensland:- 1.825, 3.605, 7.118, 10.135, 14.342, 21.175, 52.525, 147.000, 438.500 MHz. Right throughout VK4 scan 146.6 to 148.0 MHz again at 9am local. SUNDAY 6:45pm hear LAST week's QNEWS broadcast 3.605 and 147.0 MHz from South East Queensland. MONDAY 7:00pm hear YESTERDAY's news again on 146.875 MHz broadcast from Brisbanes Bayside repeater, and then 7:30pm on 3.605 and 147.0 MHz from Sth East Queensland. Text editions on packet internet and personal email, visit www.wia.org.au/vk4 News is updated 24/7 in both text and audio on this site. MP3 Audio from same website by 2300 hours each Saturday. Contact QNEWS, packet sp QNEWS@VK4WIE.BNE.QLD.AUS.OC email qnews@wia.org.au
Annual Membership Fees. Full $95.00 Pensioner or student $81.00. Without *Amateur Radio* $69.00

VK5 Division South Australia and Northern Territory
(GPO Box 1234 Adelaide SA 5001)
Phone 08 8294 2992
web: *http://www.sant.wia.org.au*
email: *peter.reichelt@bigpond.com*

President	Trevor Quick	VK5ATQ
Secretary	Peter Reichelt	VK5APR
Treasurer	Trevor Quick	VK5ATQ

VK5WI: 1843 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.800 FM Mildura, 146.900 FM South East, 146.925 FM Central North, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide. (NT) 3.555 LSB, 7.065 LSB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. The repeat of the broadcast occurs Monday Nights at 1930hrs on 3585kHz and 146.675 MHz FM. The broadcast is available in 'Realaudio' format from the website at www.sant.wia.org.au Broadcast Page area.
Annual Membership Fees. Full $88.00 Pensioner or student $73.00. Without *Amateur Radio* $58.00

VK6 Division Western Australia
PO Box 10 West Perth WA 6872
Phone 08 9351 8873
Web: *http://www.wia.org.au/vk6*
e-mail: *vk6@wia.org.au*

President	Neil Penfold	VK6NE
Secretary	Roy Watkins	VK6XV
Treasurer	Bruce Hedland-Thomas	VK6OO

VK6WIA: 146.700 FM(R) Perth at 0930hrs Sunday relayed on 1.865, 3.564, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120 FM, 50.150 and 438.525 MHz, Country relays 3.582, 147.200 (R) Cataby, 147.350 (R) Busselton, 146.900 (R) Mt William (Bunbury).147.000 (R) Katanning and 147.250 (R) Mt Saddleback. Broadcast repeated on 146.700 at 1900 hrs Sunday relayed on 1.865, 3.564 and 438.525 MHz : country relays on 146.900,147.000, 147.200, 147.250 and 147.350 MHz..Also in "Real Audio" format from the VK6 WIA website
Annual Membership Fees. Full $71.00 Pensioner or student $65.00. Without *Amateur Radio* $39.00

VK7 Division Tasmania
PO Box 371 Hobart TAS 7001
Phone 03 6234 3553 (BH)
Web: *http://www.wia.org.au/vk7*
email: *vk7dg@wia.org.au*

President	Phil Corby	VK7ZAX
Secretary	Dale Barnes	VK7DG
Treasurer	Dale Barnes	VK7DG

VK7WI: At 0930 hrs every Sunday on 146.700 MHz FM (VK7RHT, Hobart) and relayed on 147.000 MHz FM (VK7RAA, Launceston), 146.625 MHz FM (VK7RMD, Ulverstone), 146.750 MHz FM (VK7RNW, Ulverstone), 147.075 MHz FM (VK7RWC, Rosebery), 3.57 MHz LSB, 7.090 MHz LSB, 14.130 MHz USB and UHF CB Channel 15 in Hobart area.
Annual Membership Fees. Full $90.00 Pensioner or student $77.00. Without *Amateur Radio* $57.00

VK8 Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown, received on 14 or 28 MHz. The broadcast is downloaded via the Internet.

DX-pedition in Paradise

8Q Maldive Islands

July 2003

Malcolm Johnson VK6LC(8Q7LC) *(left) and John Gillespie* K4JWG (8Q7JG) (right) with their Maldivian host Ibrahim 8Q7QC- (centre)

Mal 8Q7LC and John 8Q7JG on the beach

The Maldives were warm, tropical, seductive. In July conditions for propagation were good in that latitude, very poor down under. So John and Mal decided to do it, and do it in style. They put their 4WD DX-pedition following the Tropic of Capricorn on hold and headed for Paradise, with no tents, no backaches, no nasty crocodiles and above all, *no baked beans!*

See the full story inside.

Mal 8Q7LC and John 8Q7JG with the Maldivian Air Taxi

Volume 71 Number 12 DECEMBER 2003 Print Post Approved PP349181/00420

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